ROCKS MINERALS

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Official Journal of the Rocks and Minerals Association



Vol. 21, No. 12

Whole No. 185

A Magazine for Mineralogists, Geologists and Collectors

DECEMBER, 1946

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7th LIST OF FINE MINERALS FROM AN OLD COLLECTION

Antimony, Sarawak, Borneo. Granular xlline, tin white, $2\frac{1}{2} \times 1\frac{1}{2} \times 1\frac{1}{2}$	\$ 2.50
Orthoclase, Baveno, Small twin xls, with Quartz on rock. 31/2 x 2	2.00
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Almandite, Salida, Good 21/2" xl. coated with Aphrosiderite	2.00
Welferste County Village State of the County	
Wolframite, Cornwall. Xlline, masses in Quartz. 3 x 2	2.00
Linarite, Cumberland. Xld. in rock w. some Caledonite. 2 x 1 ½	3.00
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Andradite v. Colophonite, Essex Co., N. Y. Granular mass	2.00
Sepiolite (Meerschaum), Eski Sher. Polished nodular mass. 4 x 3	3.50
Teallite, Bolivia. W. Wurtzite & Cassiterite. 3 x 2 x 2	3.00
Chrysoberyl, Hartford, Me, Large (11/8") complete xl. in rock, 3 x 2	10.00
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Celestite, Sicily, Brilliant small xls. w. xld. Sulphur. 4 x 2	3.00
	3.50
Aragonite v. Flos Ferri, Styria. Very good coralloidal mass. 4 x 3	
Psittacinite, S.W. Africa. On massive Quartz. 3 x 2 x 1 1/2	3.00
Lindgrenite, Chile. Coating w. some micro. xls. on rock. Fair. 3 x 21/2	3.00
Eudialyte v. Eucolite, Norway. Masses in rock, 3 x 2	1.50
Dioptase, Katanga. Well xid., no gangue. 2 x 1 1/4	10.00
Aragonite v. Teruelite, Teruel, Spain. 6 sharp black xls. in Gypsum.	
4 x 2 x 2	5.00
Barite, Cumberland. Attractive group of brilliant dark yellow xls.	3.00
5 - A - 2	6.00
5 x 4 x 2 Actinolite, Spruce Pine, N. C. Xls. in Talc. 4 x 3	2.00
Actinoitie, Spruce Pine, N. C. Als. in Talc. 4 x 3	
Crocidelite, West Quincy, Mass. Fibrous mass w. rock. 5 x 3 x 21/2	3.50
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Epidote, Tyrol. Slender loose terminated xl. 21/2"	5.00
Apatite, Tyrol. 1 1/8" yellowish transparent xl. w. Chlorite	2.50
Euxenite, Madagascar. Large sharp xl. 134 x 158. (2½ oz.)	5.00
Carrelline Calarada VId 31/2 rs 11/2	3.50
Apatite, Greenwood, Me. Very X 1/4 Apatite, Greenwood, Me. Very X	3.30
Aparite, Greenwood, Me. Very good lilac xis. up to 1/4" thickly xid. on	
Muscovite, Z 1/2 x 1 1/4. Very attractive.	6.00
Scapolite (Wernerite), Gouverneur. Large crude xl. 2 x 1 1/4	1.50
Dufrenite, Virginia. Radiated fibrous mass. 2 x 2	1.50
Cassiterite, Nigeria. Good brilliant twin xl. 11/2 x 11/4. (4 oz.)	7.50
Samarskite, Brazil. Good 1 1/4 inch xl	1.50
Ampangabeite, Madagascar. 7/8 inch xl	3.00
Spencerite, Salmo. Xlline. mass. 2 x 1 ½	6.00
Meliphanite, Norway. Xlline, masses in rock. 2 x 2	2.50
Meliphanite, Norway. Aline. masses in rock. 2 x 2	
Pyrargyrite, Andreasberg. Small brilliant xls. w. Calcite. 2 x 21/2	15.00
Clinochlore, Tilly Foster. Xld. w. Chondrodite. Fair quality. 3 x 11/2	3.50
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Euclase, Brazil. Well terminated 1/8" xl., greenish. Plus 20% tax	8.00
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Pyromorphite, Berezovsk, Small brilliant green xls. on rock, 21/2 x 1	
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Strontianite, Hamm, Germany. Well xld. on mass. 23/4 x 2	
Strontianite, Flamin, Germany. Well xid. on mass. 274 x 2	3.00

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ROCKS and MINERALS

Edited and Published by PETER ZODAC

> **DECEMBER** 1946

CONTENTS FOR DECEMBER, 1946

CHIPS FROM THE QUARRY838
NEW DISCOVERY OF JADE THAT RESEMBLES FRASER RIVER MATERIAL. By Allan Branham
MINERALS OF KELLY'S HOLE, UT'AH—By Ronald L. Ives
SOME LOST MINERAL LOCALITIES OF NEW ENGLAND.
1. GRANITE ST. QUARRY, SOMERVILLE, MASS. By Prof. Charles Palache
MY OKLAHOMA DESERT ROSE (POEM). By Mrs. Lillie R. Slade845
FORMAL OPENING OF THE BERMAN MEMORIAL LABORATORY846
BLUE BARITE FROM TEXAS COUNTY, MO. By Albert L. Kidwell849
CALIFORNIA MINERAL PRODUCTION FOR 1945, THE LARGEST ON RECORD850
AMAZING SPEED CLAIMED FOR HILLQUIST HOLE SAW AND GEM DRILL
GEOLOGY OF LONG ISLAND. By Jay T. Fox851
AGATE BEACH, OREGON. By Anthony Thurston862
RUBY AND AMETHYSTINE CORUNDUM IN NEW JERSEY863
CLUB AND SOCIETY NOTES864
WITH OUR DEALERS 868
VALLEY WELL IS CALIFORNIA'S DEEPEST
LAPIDARY EQUIPMENT CO. PURCHASES NEW SEATTLE LOCATION
THE AMATEUR LAPIDARY. ISN'T THAT A DAISY? By Lucille Sanger 871
AN EPIDOTE FIND IN COLORADO. By Guy B. Ellermeier
INDEX TO ADVERTISERS932
GENERAL INDEX OF AUTHORS AND CONTENTS. VOL. 21-1946933

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ROCKS and MINERALS

PEEKSKILL, N. Y., U. S. A.

The official Journal of the Rocks and Minerals Association

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to all subscribers, advertisers, and friends

May good health and good fortune join forces to watch over each and everyone of you during every day of 1947 and in addition may our dear Lord shower down His choicest Blessings on all of you.

A NEW DISCOVERY OF JADE THAT RESEMBLES FRASER RIVER MATERIAL

BY ALLAN BRANHAM

Bx 562 Lander, Wyo.

A new and immense deposit of jade has been found near Lander, in western Wyoming. This discovery was made by a cattle-man who has not hitherto been interested in gem materials. The season had passed for rock hunting and the rock collectors from most every state in the Union, who had infested the jade fields all summer, had pulled stakes and departed for their respective homes. It was round-up" time for the cattle owners in the famous Sweetwater River country. The ever increasing winds were blowing a gale as they do out there this time of year. A lone cowboy on a cattle-wise Bronc was bending low over the saddle when he spied a lump of pretty green rock, such as the tourists, that were crossing and recrossing his bridge, had been asking him about all summer. Slowly he pulled up and dismounted, and reins in hand picked up the pretty lump. Glancing up the hill he spied another lump, then another and still anothernow he was facing a solid high wall and to his suprise it was a wall of green, and the green was Jade. Cattle herding was forgotten as he raced for the home with his samples, now aware of the importance of his find because of the many inquiries from the tourists that had cluttered up his ranch all summer.

The cowboy decided, however, that altho the jade was on his own land he

would take up a claim on this material. He did, and this claim, unlike the hundreds that clutter the landscape and are not legal, is strictly legal and the assesment is being done according to law. The jade being quarried out is a good deal like the jade found on Fraser River, in British Columbia, Canada but 1000% better grade. It has been sent to a reliable University and pronounced Nephrite lade. The first large lot went to a millionaire collector of jade in Chicago and he is quoted in saying "It is one of the most beautiful jade specimens I have yet seen." The material is of a more granular structure than the other Nephrite found earlier, which was fibrous in structure. It polishes much easier than the other and is more opaque rather than translucent. Most all the colors gotten out so far have been light greens mottled. Another peculiar thing and unheard of before, is the fact that there is such a thing as a jade crystal and they are being found in this deposit now and then. This will probably upset all theories about jade and have the experts scratching their heads. No telling what may be found in this deposit as it gets deeper. This deposit dwarfs all other gem finds in the Wyoming Jade fields and may turn out to be the most important gem find in the decade.

ROCKS and MINERALS

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Edited and Published by PETER ZODAC

> DECEMBER 1946

MINERALS OF KELLY'S HOLE, UTAH

BY RONALD L. IVES

ABSTRACT

Mineral deposits of the Kelly's Hole area, a mineralized graben in the Dugway Mountains, Tooele County, Utah, are here described; their geologic and physiographic environment outlined; their possible origin discussed; and the legendary history of the region briefly touched upon.

INTRODUCTION

Kelly's Hole is an isolated and inaccessible valley in the northwest end of the Dugway Range, located in Tooele County, Utah. Here, according to local legends, the Mormon polygamists hid from the U. S. marshals two generations ago, picked out the richest lumps of ore to be smuggled out for sale at distant points. At one time, ores from the Dugway Range were smelted locally, the mixed metals being packed out on mules and in wagons to St. Joseph, Mo.;

thence by river boat to New Orleans; and finally to Wales, where they were resmelted and separated. Fuel for the smelter was packed in over 100 miles. The old smelter on the east side of the range is still standing (Fig. 1).

Some of the legends state that fifty million dollar's worth of gold ore was smelted here. Size of the slag piles indicates that perhaps half a million dollars' worth of gold could have been smelted.

Largely due to the efforts of Jesse Cannon, son of a Morman pioneer, the mineral resources of the valley have been partially explored, a mining road has been built into the area, and some ore has been shipped. Although at an age when most men seek out a rocking chair near the stove, Mr. Cannon makes frequent trips to the region, and keeps several men at work, developing the claims.



Fig. 1 The old Dugway Smelter, located on the east side of the Range at the foot of Yellow Jacket Gulch. Note the shorelines on the mountains in the background.

LOCATION AND ACCESSIBILITY

Geographic location of Kelly's Hole, according to the best available data, is Lat. 40°02' N.; Long. 113° 14' W.;; Alt. 4850' MSL. Relation of Kelly's Hole to other features of the Utah Desert region is shown in Fig. 2. So isolated is the valley that few maps show it, and only a few hundred people have ever seen it.

Kelly's Hole may be reached from Salt Lake City by several roads, all passing through Simpson Springs, the last water source that can be depended upon. From Simpson Springs, go about 24 miles west southwest on the only passable road to the foot of the Dugway Mountains. Here, turn right (north), and take the only passable road along the foot of the Dugway Mountains. About 12 miles north, the road turns westward into a canyon. This is Yellow Jacket Gulch, site of the Four Metals and Yellow

Jacket workings. The old Smelter can be reached from the foot of this canyon over a relatively new road. Do not go past the smelter, as the area east of a is a military reservation.

This area produces zinc, lead, silver, and gold in almost commercial quantities, and is notable for several large thrust faults. A general view across Yellow Jacket Gulch is shown in Fig. 3.

From the Four Metals Mine, the road winds upward, over a low pass; then down to the Provo shoreline, which it follows for about a mile, then up a steep grade and over a ridge to Kelly's Hole. Appearance of Kelly's Hole from the ridge is shown in Fig. 4. This road is a "low gear" road, and should not be attempted by cars lacking pulling power.

REGIONAL GEOLOGY

The entire Dugway Range is composed of partially metamorphosed early pale ozoic sandstones and limestones, with tain

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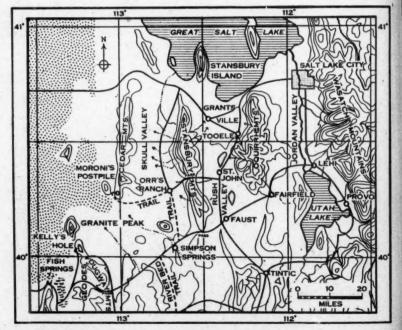


Fig. 2 Map of the Utah Desert region, showing location of Kelly's Hole, and its relation to other features of the region. Contour interval is about 1,000 feet, lowest contour about 5,000 feet.

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Fig. 3 Yellow Jacket Gulch, Dugway Mountains, as seen from the south rim. Rocks in the foreground are paleozoic limestones and sandstones, partially metamorphosed, and cut is places by mineral veins. The mountain in the background is Granite Peak; and the small range in the right distance, surrounded by salt beds and mirages, is Wildcat Mountain, a fluorite area.

numerous intrusions and mineralizations. In general, both the degree of metamorphism and the number of intrusions increase southward, toward the Thomas Range, which adjoins the Dugway.

Structurally, the area is complex, there having been several periods of deformation. Most of the major features can be accounted for by assuming that the range was once a canoe fold in the sediments, which later collapsed and was repeatedly mineralized.

Kelly's Hole is a fault-bounded valley, tentatively classed as a graben. The topographic low which forms the floor of the valley could well have been created when the sediments between the two main boundary faults (B and C, Fig. 6) were assimilated by a granitic intrusion, a small part of which forms the northwest rim of the depression.

A view of Kelly's Hole, taken from the north, at an altitude of about 20,000 feet, is shown in Fig. 5. In this view the structural and topographic complexity of the area is shown.

MINERAL DEPOSITS

Mineral deposits in Kelly's Hole are associated with the major faults. These



Fig. 4 Kelly's Hole, as seen from the access road over the northwest rim.

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are shown in Fig. 6, a reconnaissance map from which many minor features are omitted. In the mineralized zones, there may be as many as twenty small faults or veins within 100 feet.

Fault A (Fig. 6) is barren. Faults B and C are associated with relatively rich copper mineralization, and in the numerous mines along them can be found beautiful specimens of malachite and azurite, as well as numerous transitional minerals, created by the partial silicification of these carbonates. Some of these silicified carbonates are locally called turquoise, and bear a close resemblance to it macroscopically. However, close inspection shows that most of the so-called turquoise is actually porous copper carbonate, with the pores filled with silica.

Best copper specimens are found at the split of fault C, in the northwest end of Kelly's Hole. Several small mines are being worked here, and fresh specimens can be found on the dumps. Some reasonably good specimens of malachite can be found in the dumps from tunnels run into the intersections of fault B with D and E.. Elsewhere along fault B the minerals are disappointing to both the collector and the miner.

Accompanying the best malachite and azurite in some locations is powdery red hematite, probably organically deposited during the higher stages of lake Bonneville. This material, which can be crushed to fine powder with the fingers, was worked by the Indians, and lumps of it, along with small grinders, have been found in an old beach camp northeast of Camelback Mtn.

Along fault F (Fig. 6) can be found streaks of lead carbonate, mixed with limonite. This fault carries a lead-zinc mineralization, but has not produced either collector's specimens or ore worth having.



Fig. 5 Aerial view of Kelly's Hole. The prominent shoreline is the Bonneville, having an approximate altitude of 5,200 feet. The next range of mountains is an outlier of the Thomas Range. Those in the distance at the right are the Fish Springs Mountains, while those at the left are a part of the House Range. Between these two, in the far distance almost concealed by haxe and mirages, are the Deep Creek Mountains, near the Nevada line. The white area in the right middle distance is a part of the Bonneville Salt Flats. In the center, at the edge of the salt flats, is the Dugway shoreline, possibly dating from the "little Ice Age" of about 4,000 years ago.

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Fault G, which also carries a lead-zinc mineralization, is a producer of fairly good galena, mixed with a small amount of sphalerite. The winding trail on the far side of Kelly's Hole in Fig. 5. leads up to a lead prospect in this vein. Fault H, although rather inaccessible, contains good galena, and occasional good sphalerite at both ends. Some siderite was found in dumps from a prospect at the north end of this faulted zone, but none was found in place.

In both the copper and lead-zinc veins, occasional chunks of pyrite are found. Miners report occasional finds of chalcopyrite, which is entirely logical, but none were found by the writer. Local reports of alleged cinnabar tested out to be hematite.

Occupying the whole center of the valley, between faults B and C is a mass of low grade copper ore, present as a disseminated deposit in what appears to be limestone partially digested in grantie. Some miners believe that this is "another Bingham," but the long haul to the railroad, and the lack of water for

local concentration, will probably keep it out of production for several generations.

On the northwest ridge of Kelly's Hole, near the road, can be found occasional large crystals of feldspar, masses of milky quartz, and small books of mica. These appear to be residuals from a granite mass now eroded away, as no pegmatite in any quantity is now found there.

In this area, although by no means peculiar to it, can be found masses of calcareous tufa, also called lake coral. This material, deposited in masses of algae along the shores of the ancient lake, gives definite proof that the waters were not as salty as those of the present Great Salt Lake, Occasionally, in these same deposits, largely confined to areas close to the Bonneville and Provo shorelines, clusters of small fresh water snail shells, not fossilized, and perfectly preserved, can be found. The same tufas, and their associated marls, contain diatoms indistinguishable from modern types, showing that the lake deposits are

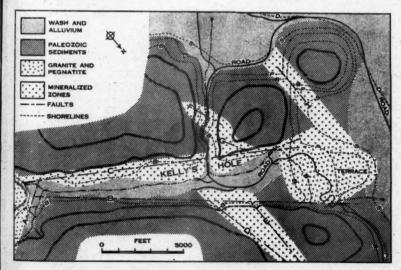


Fig. 6 Reconnaissance map of Kelly's Hole, showing principal faults and mineralized sones. Dotted lines are shorelines, which in this area can be used as contours. Letters B, P, S, and D on these lines refer to the Bonneville, Provo, Stansbury and Dugway shorelines, respectively.

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not of great geologic antiquity.

Some fossils, such as poorly-preserved trilobites, corals, sponges (?), and crinoid stems are found in various parts of the Dugway Range. Should any good specimens be found, they should be reported to the U. S. Geological Survey, with complete data, as the fossil collections from this area leave much to be desired, and the datings of the various formations can be made more specific if and when better fossils are found.

CONCLUSIONS

Kelly's Hole, although quite isolated, and relatively hard to reach, is well worth a visit, for in the area can be found data of interest to the mineralogist, paleontologist, geomorphologist or

historian. These are some excellent photographic possibilities in the vicinity

Collecting in the area, due to the excellent relations between the local miners and those who usually visit the area, is quite easy. It has become customary to take a current newspaper and a few magazines to Kelly's Hole on each visit as the area is not on an RFD route, and the miners get mail about once in two weeks.

Entry to Kelly's Hole should only be attempted via the road over the rim. Attempts to enter or leave by way of the canyon to the southwest (Fig 7), which is reported to resemble the road to Petra, in Asia Minor, will result in very long walk back if any vehicle other than a jeep or half-track is used.



Fig. 7 Canyon draining the Kelly's Hole area. The mountains on the horizon, across the Salt Flats, are the Fish Springs range.

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SOME LOST MINERAL LOCALITIES OF NEW ENGLAND

1. Granite St. Quarry Somerville, Massachusetts

BY PROF. CHARLES PALACHE

Cambridge, Mass.

I came to Cambridge to begin my work in the Harvard Mineral Museum in the winter of 1895 and naturally looked over the collections early to find specimens from near-by localities which might still be available to a natural collecting pack rat. Finding little I turned to the list of mineral localities in Dana's Mineralogy and found there Somerville, with quite a list of species. This town being close at hand, I looked at the older mineral lists and found as far back as Robinson the name of Milk-Row Quarry, Charlestown, where black hornblende and prehnite were to be found. This hornblende, later identified as babingtonite, sounded interesting, so early in the spring I wandered through the streets of Somerville, formerly part of Charlestown, looking for Granite Street, the newer name of the locality. It proved to be an alley one block long leading into a fair sized quarry opened into the side of a dike of diabase, a fairly coarse-grained fresh rock which had first been called syenite and then granite. This rock was quarried for foundation stone and especially for heavy square fence posts many of which may still be seen along Cambridge streets. The dike was later found to be an extension to the south of the large Medford diabase dike, the subject of various studies, petrographic and structural, as well as of its characteristic spheroidal weathering.

The mineral veins were small and occasional but the bright green prehnites and snowy calcite of the vein centers were attractive. The veins were rarely open and then one might occasionally find one of the shining black babingtonite crystals and they could, also be found by etching out the calcite with acid which attacked the prehnite but slightly. My first visit was followed by many others but it was years before I had accumulated enough babingtonite to yield a sample for analysis, and crystals good enough for a study of their forms. I never did find the zeolites listed in Dana,

laumontite, stilbite and chabazite, but some of them turned up in old collections. The so-called melanolite was a bronzy altered chlorite, rarely black, which still remains undescribed beyond the first analysis.

So began my acquaintance with the interesting mineral babingtonite which has turned up in so many localities in the state of Massachusetts that it well deserves the place, if one were to be named, of State Mineral of the Bay State.

With the replacement of stone by concrete for foundation work demand for the Somerville diabase fell off and the quarry was abandoned. When last I saw it the floor had been filled with ashes and city waste, the exposed face of rock was weathered and all signs of minerals had vanished.

The full description of this locality and the babingtonite may be found in a paper by Palache and Fraprie, Babingtonite from Somerville, Mass. Proc. of the Am. Acad. of Arts and Sciences, 38, 383-393, 1902.

My Oklahoma Desert Rose (Dedicated to J. B. Langford of Oklahoma City, Okla.)

Your leaves are crystals twinned. Your color dusky rose. It awakes an eager yearning Your prestige to impose.

Your sulphate barite heart.
An angled hollow hides.
And wholly all you testify
That truly God abides.

Shining gems were bartered For you round rose alone, For other crystals seemed to me Not half so dear to own.

Parity, back and face
Uniqueness I suppose
Makes me admire you ever more
My Ok-la-ho-ma Rose.

Mrs. Lillie R. Slade

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FORMAL OPENING OF THE BERMAN MEMORIAL LABORATORY

On the evening of Nov. 1st 1946, the opening exercises of the Berman Memorial Laboratory were held in the Mineralogy Dept. at Harvard University, Cambridge, Mass. A Dinner at the Harvard Faculty Club preceded the dedi-

cation.

Fifty-five persons attended the Dinner, and an additional number were present at the Opening. It was a most distinguished gathering, representing some of the outstanding geologists and mineralogists of the country as well as a number of well-known mineral collectors from various Societies, among them the editor of this magazine. It was a great tribute to Dr. Harry Berman whose tragic death occurred in 1944 while engaged in war-mineral research for the government.

Among the amateur mineralogists present were Prof. M. J. Bailey of Boston University, Dr. E. L. Prien of Brookline, Mass., L. H. Bauer of Franklin, N. J., H. M. Paskow, Arnold Hoffman and Arthur Montgomery, all of New York

City.

In addition to Harvard mineralogists and geologists, visiting mineralogists included Drs. E. N., Winchell formerly of the University of Wisconsin, W. T. Schaller of the U. S. Geological Survey, F. H. Pough of the American Museum of Natural History, W. H. Pecora and E. S. Larsen III, of the U. S. Geological Survey. Dr. H. R. Aldrich, Secretary of the Geological Society of America, was one of the guests. Three Harvard graduate students in geology and mineralogy who were present, represented three foreign countries, Brazil, China, and Norway.

The project of the Berman Memorial Laboratory has been described already in Rocks and Minerals (Feb. 1945, p.50), and a good many R. & M. subscribers generously donated to the Fund. The plan for the Laboratory was started by a group of personal friends of Dr. Berman who wanted to preserve and continue the spirit and the work which made him a greatly beloved person and one of the

outstanding mineralogists of our time. The Reeves Sound Laboratories of New York, the success of whose quartz-oscillator plant was largely due to Dr. Berman, had pledged \$50,000.00 to this Memorial Fund. The pledge was never fulfilled. With the loss of such a donation, the Fund had serious difficulties in raising sufficient funds for completion of the planned laboratory. The present completion of it thus represents a signal achievement on the part of the friends of Dr. Berman.

All of these facts were brought out in Mr. Arnold Hoffman's address at the close of the Dinner. Mr. Hoffman, one of the Fund's trustees, stated that with completion of the Laboratory and installation of equipment, the first part of the program had been accomplished. The next step, adequate endowment of the Laboratory, had barely begun, and would require whole-hearted support on a truly national scale. A fund of about \$100,000. 00 would have to be raised to furnish an endowment sufficient to guarantee a permanent research directorship for the Laboratory. Very little full-time research, and hardly any of the broadly-conceived major aims, could be carried out unless there were adequate endowment. A great effort must be made by all who felt an interest in the Laboratory, and shared a faith in its objectives, to achieve such an end.

There were a number of other speakers after the Dinner. Prof. Charles Palache, of Harvard, who presided, spoke first. He described the early history of the plans for the Laboratory; then recounted some largely personal incidents in the life and work of Dr. Berman at Harvard. It was he who introduced each speaker, and he continued these reminiscences between each speech. It was a delightful and informal approach to the subject, and gave the whole proceedings a thoroughly humanistic flavor.

The second speaker was Prof. E. S. Larsen, Chairman of the Mineralogy Department at Harvard. He spoke also in me.

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a very human vein, telling mainly of the influence exerted on all his students by Dr. Berman and their great affection for him as a teacher.

Dr. W. T. Schaller, of the U. S. Geological Survey came next and told something of Dr. Berman's earliest approach to mineralogy at the U. S. National Museum. He and Profs. Larsen and Palache all had done much to start Dr. Berman on his scientific career.

Dr. Clifford Frondel, of Harvard, followed with a brief discussion of Dr. Berman's scientific methods, his insatiable intellectual curiosity, his ability at developing new scientific tools for research.

Dr. C. S. Hurlbut, of Harvard, was the next speaker. He looked largely ahead in discussing the research to be undertaken in the new Laboratory in the immediate future and in presenting a picture of the Laboratory in the light-of far broader aims and results than through its one present tool, X-ray mineralogy.

Mr. Arthur Montgomery, of New York came last. His speech concentrated on the human qaulities of Dr. Berman's work and assessed these qualities at greater value than the scientific accomplishments. He stated that it was his humanity above all which was being honored and remembered at the Dinner and which specifically had given inspiration to the plan for the Laboratory. There could be two kinds of Laboratory: one dedicated to Harry Berman, the scientist, and simply a laboratory for X-ray mineralogical research in the Harvard Department of Mineralogy; the other dedicated in a wholly different spirit, aimed in the direction of furthering a broader and more human application of the science. The speaker listed a number of objectives which the Laboratory might have. These were:

1. The policy (not the actual work) of the Laboratory should be kept under the direction of a mixed group, perhaps half to be those who were in the Harvard Mineralogy Department and who work in the Laboratory, and half to be interested and active people on the outside who were preferably amateur rather than professional mineralogists.

2. The Laboratory should be publicized as widely as possible so as to create interest in it on as wide a scale as possible. A series of pamphlets could be issued from time to time, telling of the Laboratory, its aims and purposes, and the work that was being carried on inside it.

3. The Laboratory should be accessible at all times (except during classes and in conflict with research) to anybody interested in mineralogy, and could become a place where help might be freely given to anyone with questions or problems in mineralogy. Thus closer relations would be promoted between amateur and professional mineralogy, and something accomplished to help bridge the gap which does exist today between these two groups.

 With adequate endowment the Laboratory in time could establish scholarships, American and foreign, for mineralogical study.

ogical study.

5 One of the aim

One of the aims could be to promote closer relations with mineralogy in foreign countries.

6. Another aim would be to reach out through mineralogy to other fields of endeavor. An example of how important mineralogy can be, when given the proper inspiration, in a field like medicine, is shown by the medical-mineralogical research started by Prien-Berman and carried

on now by Prien-Frondel.

In conclusion, the speaker explained reasons for thinking that science need more of a humanizing spirit and a moral purpose higher than the goal, advancement of knowledge. With more and more specialization science seemed to be getting further and further away from the broad and fundamental concepts which can have meaning for, and be understood by, society. Mineralogical science, for example, seemed less and less to concern itself with minerals as the human eye sees them and as the human hand touches them, the way Dr. Berman saw and touched them. There seemed to be less and less of any attempt at unifying and putting into simple and interpretable terms the ever-growing mass of unrelated types of data resulting from research. Research must always lead the way in science, but too much of it for its own

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sake could become a knowing more and more about less and less. Giving science more of a direction toward usefulness and a new spirit of moral purpose, would combat this trend. Dr. Berman's life and work were an inspired example of how such qualities may be imparted to as highly a specialized and factual a science as mineralogy. If the Berman Laboratory could be dedicated in such a spirit, not only the work of Harry Berman but the guiding inspiration behind it could be preserved within it for the future.

Following the Dinner the Laboratory was formally opened in the Harvard Mineralogy Department over in the Geological Museum. The guests found it a mixture of impressive X-ray diffraction equipment of newest type and a wholly artistic interior decoration. It is certain that no small research laboratory has ever been

quite like it.

The room is located on the second floor of the Museum, directly above the Mineralogy Library. It measures about 20 ft. square, and has a low ceiling of celotex. The walls are painted a pale green of tasteful shade. The floor presents a colorful picture in alternating light and dark-brown asphalt tiles. There are two long work benches, topped with reddishbrown linoleum and stainless steel side borders. There are six chairs of modernistic metal design, finished in similar Two dark rooms, completely equipped for film development and for goniometric crystal measurement, are included in the Laboratory. Seven ultraviolet ceiling lamps of a new design furnish a completely diffused illumination.

There are four X-ray diffraction units along one wall and to the right of the door. They are of very advanced type, and three are equipped with cameras for taking X-ray powder photographs. Some of these cameras represent totally new design; one, for example, contains an electric furnace inside it. The fourth unit is equipped with two Weissenberg X-ray cameras, one being of the newest type. Much other equipment has been assembled to accompany these master X-ray units. When in full operation, as many as eight or ten X-ray photographs may be exposed

at one time. One cannot help remembering the endless difficulties experienced by Dr. Berman in his early X-ray mineralogical research in the Geological Museum, trying to make one of the pioneer X-ray diffraction machines work, a machine he had put together himself with odds and ends of materials. And one realizes that all of that painstaking effort, as awkward and inefficient as it was, has became the inspiration at last for this new and superlative equipment in the Memorial Laboratory.

On the wall above the X-ray units hangs a marvelous portrait of Dr. Berman. This was done by Irwin Hoffman shortly before the Opening, and represents his personal gift to the Laboratory. It is difficult to express adequately the value of this gift to the Laboratory. It brings much of the character, the spirit of Dr. Berman into the room, for into it went much of the friendship and affection of the artist for the subject. So it is that a portrait becomes a living thing.

The guests spent several hours viewing the Laboratory and the Mineral Museum upstairs where a special case had been arranged to show some of the minerals, as quartz, iceland spar and calcite, in whose industrial development Dr. Berman had been especially prominent. During this time Dr. Hurlbut gave a demonstration lecture in the Laboratory on some of the X-ray methods to be used. He and Dr. Frondel will be the chief research workers there for the present.

Many came away from the Opening with the feeling that this Laboratory already was something unique in mineral ogy, and, provided the announced aims could be fulfilled, might be destined to become an active force in the direction of revolutionary developments in the science.

It is to be hoped that readers of Rocks and Minerals will become more and more interested in this Laboratory, so that the will wish to remain in touch with its progress and be willing to take an active part in its program of future activities. Whether each one knew him or not, be will understand and feel the inspiration in this Laboratory of one who was a friend to all.

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BLUE BARITE FROM TEXAS COUNTY, MISSOURI

BY ALBERT L. KIDWELL

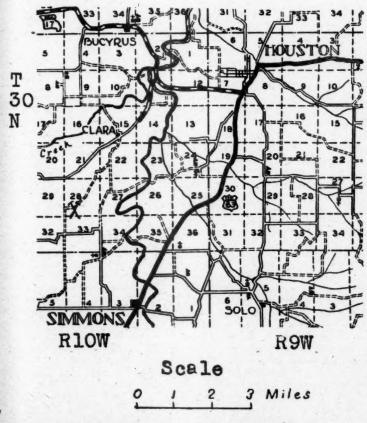
Geologist, Missouri Geological Survey and Water Resources

The Murphy Barite Mine is located about six miles southwest of Houston, the county seat of Texas County, Missouri. The exact location is the SE½ SW½ sec. 28, T. 30 N., R. 10 W., about 200 yards south of the road where it makes a bend by a deserted farm house.

The mine; which is an open pit 200 feet long, 50 feet wide, and 20 feet deep to the top of the water; was first prospected about 1919. It was later

operated by the Murphy Mining Company during part of 1941 and 1942.

The barite is found as filling material between large blocks of Jefferson City dolomite of lower Ordovician Age. Structurally, the deposit is believed to occupy an old solution opening into which the roof collapsed. This created a broken zone in which the barite was later deposited. The deposit is unique in that it is the only known commercial deposit within a radius of sixty miles.



Map showing location of Murphy Barite Mine.

Barite is the common mineral and is present in considerable quantity on the dump, but none was found in the pit due to its caved condition. The barite is all a delicate, sky-blue color, and occurs in two crystal habits. The most unusual form is a growth of crystals into a wedge-shaped mass. These masses are often as large as two inches long and two inches across the maximum width of the wedge. The other type of crystal is the common, thin, tabular form and is usually less than one inch across. Both types of crystal are often somewhat etched and frequently exhibit thin alternating white and blue bands parallel to the crystal faces. This banding was probably caused by slight changes in the solutions during the formations of the crystals. Single crystals are not commonly found, most of them occurring in groups. Limonite frequently forms an objectionable stain, but it can be removed by soaking the specimen in a dilute solution of oxalic acid.

Calcite was deposited after the barite as white, coarsely crystallized masses in openings not completely filled with barite. No good crystals were found but small cleavages may be obtained.

Quartz is present in the form of chert and drusy crystals in the Jefferson City formation which is the country rock.

Dolomite is the principal constituent

of the country rock.

The mine is not being operated at present and permission is not required to enter the property.

California Mineral Production 1945, The Largest on Record

Under the direction of W. B. Tucker, State Mineralogist, compilation of final returns from mineral producers of California for 1945 has been completed by the statistical section. The total value shown for the year was \$473,661,591.00, being an increase of \$3,887,066 over the 1944 total, which was \$469,774,525.00. The increase was due to the unprecedented output of petroleum and natural There were 58 different mineral substances, exclusive of the segregation of various stones grouped under gems, on the commercial list, and all fifty-eight counties of the State contributed.

As revealed by the following, the salient features of 1945 as compared with the previous year were: The only group that showed an increase in total value was the fuels, although the total value was the largest on record. Mineral substances showing the greatest annual output as to amount and value were barite, diatomite, gypsum, lithium minerals, natural gas, silica (quartz and glass sand), soapstone, talc and pyrophyllite, and soda (soda ash and salt cake). Petroleum registered its greatest annual yield and zinc the largest annual value.

AMAZING SPEED CLAIMED FOR HILLQUIST HOLE SAW AND GEM DRILL

'A button every sixty seconds. . . that's how fast you can cut out perfectly round discs for buttons with our Hole Saw Attachment for the Hillquist Gem Drill," states R. D. Bradley, Vice-President of the Lapidary Equipment Co., Seattle. In recent tests in the company laboratories, cutting through agate 3/16" thick, consistent production time averaged a minute per disc or less, by using auxiliary pressure lever, which is furnished "In obsidian," says with the machine. Bradley, "you can cut 'em out just about as fast as grandma used to stamp out a batch of cookies."

The Hillquist Gem Drill and Hole Saw drills the finest holes at high speed and cuts discs up to 2" in diameter. An exclusive feature of the machine is the ramrod cam action which keeps the drill tube clear at all times. According to Lapidary Equipment Co., the versatility and high speed of the Hillquist Gem Drill are unmatched by any similar equipment on the market. At present, only 1/2" and 1" hole saws are available, but other sizes can be furnished just as quickly as material becomes available.

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GEOLOGY OF LONG ISLAND

BY JAY T. FOX

Fox Museum of Natural History Seaford, L. I., New York

INTRODUCTION

For the past thirty years I have been engaged in the Natural History of Long Island. My investigations into the flora and fauna of Long Island have taken me into every nook and corner of this territory. A naturalist cannot come in contact with the plant and animal life of a region without also knowing the Geological aspects of the countryside. It was in the interest of trying to discover the Geologic changes through the interpretation of topographical contours, that I took the trouble to examine and study with considerable care, the glacial history of this island of ours.

In brief summary, the present paper has not attempted to cover all of my findings, and I regret that it is not possible here, on account of space, to give details.

In order to present an adequate analysis of the Geology of Long Island, I have also read many papers and articles on this subject and I thought it might be interesting to the reader to meet some of the early Geologists and become acquainted with some of their "findings"

EARLY GEOLOGISTS

The presentation of the first paper on this subject seems to have been written by Dupont de Nemours, who published a paper in 1750 giving a brief resume as to how the island was formed.

In 1800, Samuel L. Mitchell, wrote the Mineralogical History of New York. He described the topography and erosion of Long Island. Mitchell referred to beach dunes, large-sized boulders, and also touched upon the Marine fossils that were found when drilling some deep wells at that time. In 1809, William MacClure published the first Geological Map of the United States of America. On it he shows the Northern half of the island as—"alluvial"—a term used then which meant—"an unconsolidated bed of the Coastal Plain."

The first Geological Survey of New York was made in 1837 when W. W.

Mather was State Geologist. In his 1843 report, Mather went into great detail about the Long Island clays, fossils, lignite and peat deposits. He also wrote a complete summary on the description of the large boulders that were left by the glaciers. He is accredited with compiling the first detailed account of the Geology of Long Island. In the American Journal of Science, dated 1857, G. W. Cooke published a Geological Report that concerned, in most part, the submerged timber and marshes in the vicinity of Hempstead, Babylon and Islip.

J. D. Dana, the eminent Geologist, published in 1863 his first edition of the "Manual of Geology" in which he shows that he recognized the glacial origin of the surface deposits of Long Island. An article was written in the American Naturalist in 1876 which states that D. S. Martin discovered fossils of the Silurian Age in large boulders, thus proving that these same boulders were glacial borne. Warren Upham, in 1880, wrote on the Glacial Moraines that were situated at Roslyn and Shinnecock Hills, Long Island. N. J. Britton, in 1883, gave an account of fossils found in sandstone, and he also mentions the clays of Long

Geologists like F. J. H. Merrill, W. J. McGee, John Bryson W. H. and G. D. Harris followed "finds" or geolwith their various They then contribogical discoveries. uted this important scientific data for publication, thus increasing the amount of printed material on the Geology of Long Island. In the beginning of the 20th Century, we find many detailed reports on the Geological aspects of Long Island written by Arthur Hollock, W. O. Crosby, J. B. Woodworth, J. E. Woodman, A. C. Veatch. G. B. Shattuck and many others. The most complete report, however, is that by Myron L. Fuller, known as "Professional Paper No. 82 of the United States Geological Survey." It is entitled "The Geology of Long Island, New York." This paper was published by the United States Government Printing Office, but it is unavailable, having long been out of print.

DESCRIPTION

While Long Island is a part of the State of New York, only its far Western sector, namely Kings and Queens counties, actually adjoins the state. It is approximately 120 miles long and 20 miles in breadth at the widest part of the island (from Lloyd Neck on the North Shore to Seaford on the South shore). The major portion of the island, running West to East, lies adjacent to and directly South of the State of Connecticut. Long Island is separated from that State by a body of water known as Long Island. Sound. Long Island is extremely long and narrow and it resembles, figuratively speaking, a gigantic whale. The West-ern end seems to represent the head, while the Easterly end looks like the tail, with Orient and Montauk Points appearing as the flukes of the tail. Consequently, the high ridges that run through the center of the island from East to West can, with little imagina-tion, be called the "backbone."

TOPOGRAPHY

A cross-section of the island, from North to South, at a point somewhere near Port Jefferson, would show the geological contour as follows: starting at the Sound, first the sloping North Shore beach; then an escarpment or high plateau 100 feet or more in height, which tapers toward the center of the island. Here in the center, one would encounter two (2) distinct ridges, known as glacial knobs. These reach an elevation of 200 feet or more. From the base of the most Southernly knob or ridge the topography then continues on a gradual slope or decline, for some 10 to 12 miles to Great South Bay, diminishing at the rate of 20 feet to the mile, to actual sea level. All of this territory from the foot or base of the "backbone," southward to the Great South Bay, is geologically called, the Glacial Out-wash Plains. These morainal aprons are covered extensively with sand and fine gravel. Villages such as Hempstead, Freeport, Seaford, Amityville and Babylon are built on these great outwash plains.

GLACIERS

A glacier is a mass of ice, formed in a region of perpetual snow, moving down a slope or spreading by its own weight. As this mass of ice moves, it picks up many tons of rock, sand and other debris (drift). The combined action of the advancing of the glacier and the drift settling to the base of it, causes the underlying bedrock to become cut, scratched and grooved. As the glacier melts or retreats, these boulders, rocks, etc. are finally deposited.

There were four (4) glacial and three (3) inter-glacial periods on Long Island. These four glaciers, named locally by Fuller, are in the order of their antiquity, the Mannetto, the Jameco, the Manhasset, and the Wisconsin. These four glaciers can be correlated with the four named glaciers of the Mississippi Valley; the Nebraskian, the Kansan, the Illinoian, and the Wisconsin, commonly known as the Continental Glaciers. They also correspond in time period, to the four glaciers of the European Alps; the Gunz, the Mindel, the Riss, and the Wurm.

These glaciers were composed of Ice fields estimated to have been thousands of feet in thickness. No one knows definitely when the first or, for that matter, the last glacier was formed, but it is the concensus of scientific opinion that the last ice sheet began to melt or retreat about 40,000 years ago and retreated approximately at the rate of 30 miles every 2000 years.

GLACIAL PROCESS

Almost everywhere on land there is a surface covering of soil and sub-soil lying in contact with bedrock. This soil is really a product of disintegration, or the breaking down, of the bedrock itself. In the territory North of and adjoining Long Island, namely New York and the New England States, we find that this soil rests in sharp contrast on the bedrock itself, with little or no evidence of decayed bedrock. This soil and sub-soil

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is filled with boulders, smaller stones, rubble and sand formed from various kinds of rock, but differing entirely in structure from the native bedrock itself.

If one were to clear this soil and subsoil away from the underlying bedrock, one would find running North and South, straight parallel scratches grooves. Some of these striations on bedrock surfaces are as wide as 6 inches and some are equally as deep. This peculiar abrasive feature, namely the grooving or scratching of the bedrock, proves to us that a great scouring or scratching action took place during the transportation of the soil and sub-soil from some Northern locality, other than New York and the New England States. Only a large field of Glacial Ice carrying, or pushing, ahead of it loose material, could produce these markings on the face of this bedrock. Every geologic surface has features which deserve an explanation. scratched bedrock under the glacial deposits in this area show that these ice fields moved Southward from points as far North as Canada, Labrador, etc. Many of the larger rocks and boulders that were left in the wake of the last glacial retreat are definitely from these Northern points of origin.

The large granite boulders found along the North Shore of Long Island were carried here from the vicinity of Yonkers, Westchester and sites farther North. Smaller stones and pebbles have been found in and about Rosyln which contain fossils and fossil impressions of snails, corals, etc. These are identical to the marine fossils that can be found in the Catskill Mountains today: again, some of the boulders found on Long Island are of Sedimentary origin, particularly the large ones deposited on the North Shore. In these boulders, one can find fossils that are identical to those found to-day, in abundance, in Northern New York State. Fossils are the remains of animals and plants, or direct evidence of their presence, preserved in the rocks. It is chiefly by the aid of fossils that the age of rocks is determined.

Long Island is without doubt a most

outstanding locale for the Geologist to study Glaciology, because it is here that the most Southerly limit, or stopping point, of the aforementioned four glaciers is found. These ice fields grew very slowly and the advance, or Southerly movement, was also a very languidly process, the assumption being that they moved at the rate of 1 mile in 20 years. The animal and plant life existing prior to the coming of the first ice sheet, was greatly affected by the great climatic change, and it has been common in recent years to find pre-historic animal and plant fossilized remains while excavating in New York State. The fossil material thus unearthed shows that the climate was far more temperate then, than after the Glacial epoch. I speak particularly of the Mastadon skeletal material found in the vicinity of Cohoes, New York. Those remains prove conclusively that the territory surrounding Albany, New York, was temperate enough to give sustenance to these prehistoric forerunners of the present day Elephant.

Just how long this so called Ice Age lasted has been a matter of scientific conjecture. Some estimates run up to a million years. I will say that I do not know but I find comfort in my ignorance, however, as no one else knows.

TERMINAL MORAINES

The most Southerly extent of a glacier is called the terminal moraine, geologically defined as: an accumulation of rocks, gravel, sands, etc., that is carried and finally deposited somewhere. On Long Island the terminal moraine is known as the previously mentioned "backbone." If a bill is formed by this accumulation, the formation is called a Knob, where there is a depression, the formation is known as a Kettle. Here, at these depressions, large masses of residual glacial ice melted more slowly than the other parts of the glacier as the border melted away, and lying in one spot, became isolated. The main glacier, thus retreating, deposited stratified sands and gravel around these masses of residual ice. When these isolated masses of ice finally melted their places were marked by these depressions, or Kettles, the larger and deeper cavities often containing lakes. The most notable examples of these water filled depressions on Long Island are Lake Ronkonkoma, Lake Success, Artist Lake and Great Pond. Other depressions or Kettles filled with clay which was carried into them by the waters of the glacier. A number of these larger, clay filled, Kettles can be observed today in the vicinity of Farmingdale and Bethpage. The smaller Kettles which remained dry are known as Kettle holes. As these glacial borders melted, or retreated, on Long Island, great streams of water flowed to the sea, or, as in this case, to the Atlantic Ocean. These streams carried with them glacial fluvial material, debris, small rocks, gravel and sand. This out wash drift fanned out from the foot of the glaciers in many directions. These fan-like tracts, or morainal aprons, are called outwash plains and they start at the Southerly base of the terminal moraines or "backbone." Nearly all the territory which lies immediately South of the terminal moraine, is composed of outwash gravel that contains water-worn pebbles and sand which slope away toward the Great South Bay and the Atlantic Ocean.

DEPOSITION AND EROSION

Following the arrival of the first glacthe Mannetto, there was apparently a great up lifting, or rising, of land area. As a result of this event a great erosion process took place, which all but completely eliminated the gravels and sands of that interglacial period. The geological contour of Long Island was changed after the second glacier, the Jameco, came, left its mass of glacial till and drift, and departed. This second glacier upon its retreat, left in its wake, enormous quantities of clay. It was called "Gardiners Clay" by Fuller, a name derived from Gardiners Island which is composed in great part of this substance. (Gardiners Island is situated in Gardiners Bay on the Eastern end of Long Island.) The third glacier, the Manhasset, followed next, performing additional building up and erosioning as did the

others, and it is this glacier that is responsible for the large number of peat bogs found in various places on Long Island. The forth and last glacier, the Wisconsin, to visit Long Island, left enormous quantities of outwash debris and drift and it is this material that covers practically all the gravels, sands and clays left by the visits of the three earlier glaciers. The three former glacial drifts differ from the Wisconsin drift in this respect, the brash or constituent materials of the rocks were more decomposed and disintegrated due to weathering and they were also of less thickness. The last drift, the Wisconsin, forms a continuous covering over considerable areas; whereas the earlier drifts were discontinuous and patchy.

Quoting "Fuller" (Page 24 Geology of Long Island) "Long Island is the resultant of opposed agencies of deposition and erosion. Marine currents, ice and glacial streams have each played a part in both the upbuilding and tearing down of the island. That the deposits now above sea level are small compared to those once existing in the region, there is little doubt, indicating that since Cretaceous time, erosion has on the whole predominated over deposition. Although erosion is NOT now going on very rapidly, the amount to be removed before the island is reduced to sea-level is far less than that removed in the past, and if the conditions remain unchanged, the time yet may come when the island shall cease to exist. Not withstanding the preponderance of erosion, however, the present form of the island is due to constructional rather than destructional agencies."

BEDROCK

No geological summary is complete without some reference to the bedrock of that particular area. The only exposed bedrock found on Long Island is at the extreme Western End of the island, appearing as a narrow strip along the East River near Astoria. It is Metamorphic in character and the contour, or dip, slopes Southwestward at an average rate of 100 feet to the mile. In boring deep wells,

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this rock has been encountered at the following depths.

125 feet at Woodside

200 feet at Whitestone

300 feet at Flushing

400 feet at Port Washington

500 feet at Jamaica

In as much as there is little or no rock outcrops visible on Long Island, it might be well to mention the area adjoining Long Island, namely Manhattan, Bronx and Westchester.

The principal rocks of this neighboring territory are Archean, meaning, of a period of the Pre-Cambrian era, during which the oldest system of rocks was These old rocks contain small amounts of highly metamorphic, or altered, sediments. Throughout the Bronx, outcroppings of Fordham Gneiss are exposed to view. The body of the rock is composed of granite and quartzite, intermingled with black and white banded gneiss and schist. Among these outcroppings at Inwood, one will also find limestone, dolomite and pegmatic mica schist. All these rocks are of Igneous origin, but they have been altered by a dynamic, or disturbing, force which caused them to be folded, crushed, intruded and modified considerably by recrystallization. Sedimentary rocks are rocks that might contain fossils in situ. They are not found in this area, excepting of course, those that arrived embedded in boulders that were transported here from the North by Glaciers. A common example of these sedimentary rocks are the sandstones, shales and conglomerates. Stratified rocks, a term applied to rocks consisting of originally horizontal beds, or strata, are also rare in this vicinity, but occasionaly one comes upon them in the Western end of Long Island,; ie; Kings and Oueens Counties. Cretaceous or chalklike sediments are hidden, in most places, by the glacial deposits and the best evidence we have of this Cretaceous material is that which has been taken from deep well borings. A description of these materialistic "findings" will be given in a later paragraph.

SHORELINES

West of Port Jefferson, the North shore line is very irregular with many recesses or bays, due to the fact that the Coast has been cut into by tracts of water around which the land forms a curve. East of Port Jefferson all the way to Orient Point the shoreline is comparatively regular, forming, more or less, a straight contour. On the Easterly end of the between island, the aformentioned "flukes," lies the Peconic and Gardiners Bays. Combined, these form a body of water approximately 14 miles in one place and spreading out to 27 miles farther East. In this vast body of water there are many islands, the largest ones being Shelter and Robins Islands.

On the Southernly shore line, from Montauk Point to Southhampton, the coast follows nearly a straight line. From Southhampton to Fire Island Inlet, the shoreline continues as a straight and uninterrupted beach, but it is seperated from the mainland by the waters of the Shinnecock, Moriches and Great South Bays. This long but rather narrow strip of beach, or shore terrace, has been thrown up by Ocean waves or shore currents. Various names have been given to these beaches fronting the Atlantic Ocean. They are known as Napeague, Hampton and Fire Island Beaches. Continuing Westward, we find that the beaches are somewhat broken up by in-

lets.

Practically all of the territory on the Westerly end of the South Shore, from Fire Island to Rockaway Inlet, between the various, beaches and the mainland, is made up of salt marshes. These in turn are notched in many places by winding shallow creeks and channels. These long stretches of beach that extend the full length of Long Island on the South Shore are made up of sand, of which quartz is the most common mineral present. Here and there one is apt to find some garnetiferous and magnetic sands. These sands appear spasmodically, usually after a severe storm, and they range in width from 2 feet to 10 feet and from 5 feet to 100 feet in length averaging

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Inlet	Separating	Connecting
Shinnecock	S. Hampton & W. Hampton Beaches	Shinnecock Bay and Atlantic Oce
Morriches	W. Hampton and Morriches Beaches	Morriches Bay and Atlantic Ocea
Fire Island	Fire Island and Oak Island Beaches	Great South Bay and Atlantic Ocean
Jones	Jones Beach and Long Beach	South Oyster Bay and Atlantic Ocean
Rockaway	Rockaway Beach and Coney Island	

2 to 4 inches in thickness. These crystallized sands come from the detritus of crystalline boulders that were left by the glaciers.

SAND DUNES

Sand dunes are a product of the action of the winds upon the beach sands and the 90 miles of beaches on the South Shore are covered with them. Dunes are ridges or low hills of aeolian, or wind blown sands, the texture of which consists entirely of fine quartz grains. Some of these drifted sand dunes take the form of broad bare hills, with wind-swept surfaces, that barely reach a height of more than 20 to 30 feet, others are shaped into small mounds that are covered with the familiar beach grasses and vegetation.

While discussing sand dunes, it seems timely to mention the "sunken forests" that are located on Fire Island, on the bay side of the dunes, a short distance East of Point O'Woods. On this sandy strip of terrain, an adventurer comes upon a sight, second to none, not only because of its beauty, but also because it is situated where one would least expect to find a stand of primeval vegetation. Here one finds the fast becoming extinct 35 to 40 feet high, native Long Island Holly trees (Ilex opaca) with 12 inch trunk diameters. Giant Tupelos (Nyssa aquatica), Sassafras, (Sassafras varifolium) and Pitch Pine (Pinus rigida) measuring 15 inches or more in diameter, are found in abundance. Intermingled with these "giants" are enormous undergrowths of ferns, cattails, azaleas, bayberry, rose mallow, cranberries and beach plums. They have become entangled with cathriar, poison ivy and poison summac. These "jungles"

densely packed with impenetrable clumps of plant life; consequently, the sun is rarely seen on the floor of these thickets. As these "sunken forests" now hold the last stand of the giant American Holly on Long Island, it is hoped that our State Park Department will deem it essential to set apart this undisturbed section on Fire Island as a permanent sanctuary, before civilization engulfs it with its recreational improvements.

CLAYS In referring to the topography of the North Shore of Long Island, we find that the so-called Cretaceous clays are exposed in numerous places. On the West side of Hempstead harbor, close to Roslyn, there is an outcropping of white Cretaceous clay. At Glen Cove Landing, there is another outcropping of yellow, pink, black and grey clay, of extremely fine texture that is much contorted, bent and twisted and containing many Pyrite concretions and lignitic fragments. The Glen Cove beach is shingled with red hematitic sandstone, and if one is interested and patient enough to split apart these stone slabs, one will be rewarded for his troubles by discovering leaf, stem and other plant fossils. These fossil "finds" truly establish their having existed in the Cretaceous Age, differing greatly from the plants of today. There are many other Cretaceous outcroppings on Long Island. They appear at Sea Cliff, Lloyd Neck, Wyandanch, Farmingdale and Bethpage. In a previous paragraph that described the Glacial of Long Island, I tioned the clay-filled Kettles located at Farmingdale and Bethpage. It is at these locations that the clays are exposed to a depth of 60 to 70 feet, and there

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is also embedded in this clay, specimens of lignite (brown coal or semi-petrified wood.)

WELL RECORDS

Many deep wells have been drilled on Long Island and the material brought up to the surface from the subterranian depths have given the Geologists a closer insight to the geological aspects of the sub-surface. For example, the following Record of a well drilled on Long Beach on the South Shore, showed approximately the following: (Taken from Fuller's Geology of Long Island, page 73)

White beach sand	0-36
Dirty gray sand	36-40
Manhasset:	
Fine to coarse gray sand	40-50
Medium gray sand, no gravel	51-55
Grayish-yellow sand and small gravel	55-65
Yellowish-gray sand	65-70
Orange-yellow sand and gravel	70-73
Gray sand and gravel	73-76
Quartz gravel-blue clay	76-82
Jameco;	, 0 02
Dark coarse sand	82-90
Cretaceous:	02,0
Black sand—containing lignite	90-99
Gray sand & lignite	99-107
White sand	107-111
Dark gray sand	111-119
White sand with lignite	119-121
Very dark clay	121-135
Coarse gray clayey sand	135-143
Medium dark gray sand (salt water)	143-145
Very coarse dark gray sand	145-156
Olive green sand	156-158
Very dark lead-colored clay	158-174
White sand with lignitized wood	174-192
White gravel and salt water	192-196
Clay	196-200
Fine sand	200-220
Solid blue clay-fresh water	220-270
White sand and wood	270-276
Clay	276-282
White sand and wood	282-297
Blue clay	297-305
White sand, wood, and water	305-308
Blue clay	308-317
White sand—wood and artesian water	317-325
Blue Clay	325-340
White sand and mineral water	340-356
Blue clay	356-360
White sand and pure water	
	360-378
Blue clay	378-380
White sand	380-381 381-383
White clay	
Fine sand and artesian water	383-386

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On the North Shore of Long Island a deep well was drilled on the property of the Greenport Water Works at Green-

Yellow gravelly material

port and the following record is taken from Fuller's Geology of Long Island, Page 75.

Manhasset:	
Alternate series of sands and gravels	20-100
Brown clay (Gardiners clay)	100-150
	7 - 2
Jameco;	
Fine sands	
Coarse yellow sand and gravel	225-
Coarse quartz sands and gravels	
Cretaceous;	
White micaceous sands	555-605
Fine white sand	605-612
Bright-red sand and clay	612-619
Yellow sand and brick-red clay	
Yellowish-white clay	640-645
Salmon colored clay-dark sands	645-650
Coarse quartz sand-fresh water	
Pre-Cretaceous;	
Schist (rock)	670-690

While discussing deep wells, it might be well to mention, that a few years ago the Brooklyn Water Works sank a 1100 foot well in the Village of Seaford and encountered no bed rock at this depth.

GEOLOGICAL HIGHLIGHTS

I list below a few of the outstanding geological features on Long Island together with their locations:

- A- 20-foot glacial boulder near Whitestone Landing
- B- Large Kettle lake—Lake Success
- C- Glacial Boulder 54 feet by 40 feet, S. W. Manhassett
- D- Banded Cretaceous clays at Glen Cove Landing
- E- Botanical Fossils in red sandstone at Glen Cove Beach
- F- Sand Dunes, Salt marshes etc.-Jones, Oak Island, Fire Island beaches
- G- "Sunken Forests" East of Point O'Woods on Fire Island
- H- Clay Kettles at Farmingdale and Bethpage
- I- Sand Spit and Sand Dunes at Eaton Point.
- J- 20-foot glacial boulder 1/2 mile south of Halsite
- K- Largest Kettle Lake—Lake Ronkonkoma
- L- Glacial boulder-25 feet by 10 feet-Hallock Landing
- M- 2 Large glacial Boulders—one mile West of Wading River Station
- N- Steep bluffs along North Shore near Port Jefferson
- O- 38 feet by 20 glacial boulder at Jacob Point
- P- Barrier beaches and sand dunes at Hampton Beach.

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GEOLOGIC CHRONOLOGY

For the benefit of the layman, many I state that in geology names are given to the various Geological Eras, and for your guidance I list here a Geological Time Table or chart.

MILLION YEARS AGO

0	Man
1/2	Glacial Age
10	1
30	A 6 M 1-
50	Age of Mammals
80	
110	Flowering Plants Appear
150	Age of Dinosaurs
180	Age of Reptiles
230	Age of Reptiles
300	Coal age
350	Age of fishes
400	Corals
450	Cephalopods
600	Trilobites
600/3,000	Original Rocks

GEOLOGICAL EPOCH

Recent Time Pleistocene Pliocene Miocene Oligocene Eocene Cretaceous **Jurassic** Triassic Permian Carboniferous Devonian Silurian Ordivician Cambrian Archean

By referring to the above Geological Chart, the following summary of the Earth's Past will assist the reader in placing Long Island in its proper position in relation to the Geological Chronology of North America.

Archean: All of the rocks which make up the Earth's surface can be grouped into three divisions:

1—Igneous

2—Sedimentary 3—Metamorphic

Igneous rocks are rocks which have cooled and hardened deep within the earth. Lava from volcanoes is also igneous and is an (extrusion) whereas, igneous rocks which have cooled slowly inside the earth are (intrusions). Examples of these igneous rocks are;

Diabase, Granite and Pegmatite.

Sedimentary Rocks were formed from sand, mud and sediments that were carried from their source of origin by rivers, winds and glaciers. As these sediments piled up in layers, those which were once unconsolidated, later became solidi-

Examples of sedimentary rocks are; Sandstone, Shale, Limestones, Coal Metamorphic Rocks are altered rocks of igneous or sedimentary origin and due to heat and or pressure have been changed in composition or texture and are frequently crumpled, folded and contorted.

Examples of metamorphic rocks are: Mica schist, Marble, Gneiss etc. Cambrian:

In the beginning of the Cambrian period, the territory paralleling the Atlantic Coast of North America, now known as the Appalachian Region, was under salt water. The first animal life to leave its evidence in the rocks of the Cambrian was the fossil Trilobite, forerunner of the present day Horse-shoe Crab, which is now found in the waters adjoining Long Island. Primitive mollusks and sponges originated at this time. Ordivician:

During the Ordivician Period, these salt waters covered a greater part of North America and the peaks of the Adirondack Mountains of New York State were but mere islands in this sea. Animal life at this time was represented principally by Marine Invertebrates and giant snail-like marine mollusks called limestone Cephalopods. Widespread formations date from this period.

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Silurian; The Silurian period arrived and New York State was still covered with extensive seas. The cap-rock of Niagara Falls is of Silurian Limestone, and it rests on the older Ordivician shale. These salt waters eventually dried up, the climate now being hot and arid, and large beds of salt were deposited in Central New York State. Animal life consisted mostly of marine shell life and the large scorpion, first of the air-breathing animals appeared.

Devonian; Following the Silurian we come on the Devonian rocks. It was at this time that inland seas covered large areas of North America. Primitive fish, amphibians and plants, appeared simultaneously. At the end of the Devonian period a great uplifting took place in the North Eastern part of the United States. Enormous sharks, (Carcharodon megalodon) estimated to have been 50 feet or more in length, with teeth 5 inches long, ruled these seas.

Carboniferous; The Coal Age succeeded the Devonian, and great primitive forests of tree ferns started to grow. Later these tree ferns became covered with a tremendous amount of sediments and due to the pressure of the accumulated sedimentary material which covered them, this plant life became carbonized and a natural formation of Anthracite Coal came into existence. The Anthracite Coal region of Pennsylvania is the outcome of this Carboniferous period. Animal life at this time seems to have been limited to amphibians and large insects, some of the latter having wing spreads of 20 inches or more. The first reptiles now came into being.

Permian; During the Permian epoch, the present Appalachian Mountains were uplifted from the sea and the entire Eastern section of North America has been above sea-level since that time.

The Triassic, Jurassic and Cretaceous periods, followed in order. These three periods are known as the "Age of Reptiles."

Triassic; Only the Western part of the United States was under water during this period. Great Volcanic eruptions

took place in the East (at least three (3) successive lava flows). The Palisades of the Hudson were intruded during this time period. They are made up of igneous rock (Diabase). These vertical columns of rock developed while the igneous rock was cooling, thus giving these bold cliffs their name, "Palisades," Jurassic; During the Jurassic time the land began to form above sea-level in the Western part of the United States. Igneous rocks paralleled the Pacific Coast. Animal life materialized in the form of large reptiles, (Dinosaurs). One form in particular, (Brontosaurus) attained a length of 75 feet or more. Flying reptiles, resembling gigantic bats, also originated in the Jurassic period. They were the ancestors of the true birds. Primitive mammals and marine invertebrates similiar in form to the Crustaceans of to-day made their appearance at this time. Cretaceous; The Cretacous period followed, introducing additional reptillian monsters. The Gulf of Mexico extended Northward, as an inland sea, to the junction of the Ohio and the Mississippi rivers. A large part of the Atlantic coast, South of New Jersey, was again submerged in this period. Toward the end of the Cretaceous period, the Dinosaurs began to disappear; mammals and birds increased in number and species. The first true fish and the first seedbearing plants came into existence at this time. The Rocky Mountains were formed and again there was much volcanic activity.

The Eocene, Oligocene, Miocene and Pliocene epochs followed. Only the coastal margins of North America were covered with marine waters then. East of the Rocky Mountains great masses of sedimentary deposits were laid down, and in some places this sedimentation was thousands of feet in thickness. The "Bad Lands" of South Dakota are an outstanding example of the depositions of this period. Volcanic eruptions once more caused vast quantities of lava to cover great areas of Western United States, in some places to a depth of 4,000 to 5,000 feet. The Cascade Mountains

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were formed and all of the Rocky Mountain region was elevated by some internal disturbance. The Colorado River started cutting the Grand Canyon, one of the Geological wonders of the United States. Toward the close of this Tertiary period, animal life was about the same as it is today, with the exception of a few species which have since become extinct; ie; the Sabre Toothed Tiger, the Wolly Rhinoceros, the Mammoth and the Mastadon.

Pleistocene; Following our Geological "Time Table" we now come to the Pliestocene, or Great Ice Age which corresponds in time to the period of the Long Island Glaciers.

Recent; At the beginning of this Chart there appears the word recent; which in geology is applied to a time period in which all mammals and shells are identical with the living species of to-day.

CONCLUSION

You will note I mentioned earlier that there is little evidence of the older rocks on Long Island, namely the rocks of the Archean time, except of course at the far Western end of the island. Long Island appears to have been under water through most of the Cambrian age, and likewise under water during the Ordivician age, as has been shown by the marine fossils that have been brought to the surface from material of the borings of deep wells. There is no record on Long Island of the Devonian or Carboniferous eras, and it is a geological assumption that the land was above water during these periods. It was during the Devonian time that the mountains to the North of Long Island were being uplifted also at this time, there was considerable igneous activity.

After the mountain uplifting, there was a period of erosion; the land was worn down to a low rolling surface as is evidenced in New Jersey, where during the Triassic and Jurassic periods this region was occupied by a body of brackish water, in which the red sandstone and shale of New Jersey were laid down. Great Volcanic eruptions followed and as mentioned previously, the Palisades of the Hudson were intruded at this time.

During the end of the Jurassic period a tilting began in New Jersey, the South Eastery part sinking below sea-level and the North Westerly part rising. About this time many hundreds of feet of clayey deposits were laid down and this was known as the Cretaceous period. In the Long Island Zone, Cretaceous clays appeared at the same time.

There seems to be little or no evidence of Eocene deposits on Long Island. At the close of the Eocene Epoch, there was a tilting of the land and the Coastal Plain was depressed, enabling the Ocean to advance across the Eocene and Cretaceous deposits toward the West. Likewise Long Island shows no evidence of the Oligocene, Miocene, or Pliocene Epochs. Here again it is a geological theory that the deposition of these periods took place while Long Island was submerged. The earliest of the Long Island Glacial deposits are assumed to have occurred during Pleistocene period.

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AGATE BEACH, OREGON BY ANTHONY THURSTON

During the past summer I had the opportunity, while on a cycle trip with the American Youth Hostel Association, to visit Agate Beach, Oregon. I arrived with several others of the group, with which I went traveling, at about dusk, and camped out on the bluffs above the beach. At dawn we were scheduled to move on but found time to make one short trip down to the beach. It was an unusually low tide and a number of patches of gravel were uncovered which ordinarily are not exposed. It was still only gray dawn, but the beach was crowded with a great number of people of all ages, each with a littlt sack, picking up agates and jasper. I was unable to stay long, but managed to find a good handful of small agates within a few minutes, one or two of which should cut well. This beach is located about 85 miles southwest of Portland and is indicated on any road map. However there

are any number of beaches in the region which furnish agates and it pays to stop at any place where gravel beds are exposed.

While in the vicinity I also visited Mr. V. D. Hill's agate shop at Salem and spent a most enjoyable morning looking over his fine stock of minerals, fossil woods, and cut gems.

I am now attending the University of Missouri following the above two month trip by bike and train about the United States and Canada. Places visited were Montreal, Ottawa, Jasper and Banff Parks, Victoria, Seattle, Agate Beach, Crater Lake, Mt. Lassen Park, San Francisco, Yosemite Park, Los Angeles, Grand Canyon, Santa Fe, Carlsbad, New Orleans, etc. I traveled with a group of 29 other members of the American Youth Hostel and a good time was had by everyone.

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RUBY AND AMETHYSTINE CORUNDUM IN NEW JERSEY

Credit is due George E. Hauze, a member of the North Jersey Mineral Society, for the discovery of a unique occurrence of the mineral corundum in the quarry of the Limestone Products Corporation of America at Sparta Junction in Sussex County, New Jersey.

One day, during the past Summer, Mr. Hauze visited the Museum with a specimen he believed was corundum. Crystals of amethystine variety of corundum were readily identified. An outstanding and interesting feature of all varieties of ruby corundum found in this State is its brilliant ruby fluorescence under low frequency activation. The specimen Mr. Hauze exhibited fluoresced beautifully.

It is commonly known that corundum occurs in the region between Newton in Sussex County, New Jersey, and Warwick in New York State. Ruby of gem quality is reported to have been found many years ago in this region. The mineral has occurred in a few instances during the past few years in this limestone quarry at Sparta Junction, the most frequent occurrence being the blue or sapphire variety. Occasionally, the ruby variety has been found. This variety does not fluoresce.

On one of his trips to the Sparta Quarry, Mr. Hauze noticed tiny specks of amethystine embedded in the face of a specimen of rock. He recognized the specks as corundum. As he related in describing his find, he had long wished he could find the mineral corundum in its original location, and at last, on this occasion, he had his long-time wish fulfilled.

It was on a bright sunny day that Mr. Hauze and the writer visited the Sparta quarry and, after proper identifications at the office of the operating Company and permission from the Superintendent to prospect for minerals we explored the deposit of corundum. We found several

fine specimens. Enough of the material was secured on a subsequent trip to pass specimens around to the members of the North Jersey Mineral Society at the October meeting.

Associated with the corundum and in which it was partially embedded are numberless crystals of selenite. Other associated minerals consist of a few spinel of the gahnite variety, biotite, considerable graphite, and occasionally small rutile crystals. Still another associated mineral, and occasionally embedded in the corundum crystals, are tiny garnets partially identified as the pyrope variety. These can barely be identified with the naked eye, but are well formed and many are of gem quality. The occurrence of garnets of this variety seems to be the first to have been reported from this region of New Jersey.

The corundum occurred in a highly mineralized contact vein running in a horizontal layer through the limestone near the surface in the westerly end of the quarry. This vein was approximately eight to ten inches in width and was composed of what appears to be diaspore with biotite and dolomitic limestone. The corundum occurred in distinct crystals of more or less irregular formations from one-half inch to two inches in length and from one-eight to one-half of an inch in thickness. In some instances decomposition of the matrix left the crystals exposed in pockets and some were entirely free of matrix. Several good crystals were worked out and a few are on exhibition in the Paterson Museum. One specimen is very nearly of gem quality. The deposit has been entirely exhausted.

> Reprinted from Science Monthly November, 1946

William C. Casperson, Editor and Curator Paterson Museum Paterson, N. J.

Club and Society Notes

New York Mineralogical Club

American Museum of Natural History. New York, N. Y., Wednesday October 16, 1946.

The meeting was called to order at 8:00 P.M. and, as usual, for the first Fall meeting, no business was transacted but the entire evening was devoted to Summer Collecting Experiences of members.

Mr. Sampter spent the summer collecting in Oxford County, Maine, where he visited 16 different quarries and collected many of the pegmatite minerals such as beryl, tour-

maline, rose quartz, etc.

Mr. Morgan spent a very interesting and profitable 21/2 months on an extended collecting trip during which he visited many famous localities and collected a large number of very good specimens. He stopped in Ohio, Michigan, Minnesota, Montana, Wyoming, Iowa, and Maryland and collected fine crystals of gypsum, fluorite, celestite, amethyst, barite, sulfur, quartz in geodes, moss agates and native copper.

Dr. Hawkins developed a gel for the de-termination of relative specific gravity parti-cularly useful for minerals of high specific gravity. It is expected to be available in a

short time.

Mr. Maynard spoke on the chalcedony pseudomorphs after coral near St. Petersburg, Florida. He exhibited some choice specimens including a number that had been cut and

Mr. Yedlin did some collecting in Maine, where he got some good specimens and also reported that gold, in place, associated with limonite after pyrite, had been found near

Kibbee creek.

Dr. Holmes spent the summer doing research on gems and teaching Gems and Pre-

cious Stones in California.

Mr. Lewis reported on some exceptional Vesuvianite crystals from Nevada which are noted for their regularity of form and var-iety of colors as well as for their large size.

Mr. Marcin collected from Haddam and West Redding, Conn., where he got good specimens of tourmaline, beryl, garnet, and

zoisite.

Mr. Trainer, who specializes in Tilly Foster minerals, demonstrated that the cubic antigorite pseudomorphs from that locality

are probably derived from olivine.

Mr. McKown spent some time in North Carolina and Tennessee, where he collected some fluorescent apatite, gray and ruby cor-undum, olivine, rutile, sphalerite, actinolite, chalcopyrite, and calamine.

Miss Wade collected carnelians in Canada and autunite, uraninite, and blue beryl from dump:

New Hampshire. Good blue vivianite was also collected.

Mr. O. Ivan Lee, Dr. Yagoda, and Mr. D'Agostino were collecting in North Carolina and Virginia where they obtained numerous radioactive minerals including a unique and interesting specimen of samarskite with gummite. Mr. Lee reported that the famous Rutherford mine, Amelia, Virginia, has been worked recently and the new dumps are very good, yielding albite, amazonite, microlite, manganotantalite, etc.

The meeting was adjourned at 9:50 P.M. to enable members to examine specimens on display. Purfield J. Kent, Secretary

Report of the New York Mineralogical Club Outting

The fall field trip of the New York Min-eralogical Club Inc., held on November 10th, 1946, was a complete success. Sixtytwo members and guests attended, and for those who did not make the trip by private conveyance a chartered bus was provided. The weather was cool and clear, and the localities visited, Pine Island, N. Y., and Franklin, N. J., afforded a variety of type specimens.

Pine Island, a recently abandoned limestone quarry, in Orange County, N. Y., provided specimens of the following minerals:

Allanite, apatite, arsenopyrite, bornite, calcite, chalcopyrite, chondrodite, fluorite, graphite, hornblende, molybdenite, phlogopite, pyrite, pyrrhotite, pyroxene, quartz, ti-tanite, tourmaline, and tremolite. Of these, allanite had not been hitherto

reported from the locality, was discovered by Mr. Morgan, and found subsequently on the same day by others. It occurred in black unaltered tabular crystals, in material from a pegmatite dike, and exhibited characteristic zonal fracture in the rock. Two separate finds were made, of almost identical material. The first, by Mr. Morgan, in the southern section of the workings, and the other in a pile of loose rock near the center of the quarry.

southward and westward through rolling and scenic country, past the McAfee quarry, the party visited two of the dumps at Franklin, the Buckwheat and the Parker. The Buckwheat mine, long aband-oned and entirely fenced in, exhibited a peg-matite vein or "horse," locally called, and it was in the excavated and dumped material from this section that most of the finds Specimens of the following made. were found from here and from the Parker

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Allanite, apatite, biotite, calcite (4 types), caswellite, dolomite, epidote, fluorite, franklinite, gahnite, garnet, hancockite, hardystonite, hematite, magnetite, manganophyllite, microcline olivine, pyrite, pyroxene, quartz, schefferite, sphalerite, willemite, and zincite. It is expected that with transportation

now available more frequent excursions will be planned. The committee is working for spring visits to Roxbury, Haddam, and other Connecticut localities, and to some of the old Pennsylvania mines. Also scheduled are trips to the old iron mines in the Inter-state Park section of New York. Leo N. Yedlin

Chairman, Excursion Committee.

Colorado Mineral Society A regular meeting of the society was held on Nov, 1, 1946, at the Museum of Natural History, Denver, Colo. Mrs. Alvina M. Pohndorf of the Pohndorf Jewelry Co., in Denver, was the speaker, whose subject covered the history and legends of precious

Rochester Academy of Sciences (Mineralogical Section)

A regular meeting of the Section was held on Nov. 14, 1946, in the Rochester Academy of Science, Rochester, N. Y., Robert C. Vance spoke on "garnets and their varieties." Charles W. Foster also spoke on

his collecting experiences in Colorado.

On Nov. 21st, the Section sponsored a program in which Dr. V. Ben Meen, of the Royal Ontario Museum, Toronto, Canada, gave a most interesting talk "Highlights of a mineral collecting trip in eastern

Mineralogical Society of the District of Columbia

A regular meeting of the Society was held on Nov. 15, 1946, at the U. S. National Museum, Washington, D. C. The speaker was Dr. J. Russell Verbrycke, Jr., who gave a very unusual talk on "Hunting stones in the body—an exhibit of many shapes, colors and chemical composition of gall stones.'

East Bay Mineral Society

Three meetings were held by the Society during November, 1946. On Nov. 7th, a business meeting was held; on Nov. 14th, a directors meeting; on Nov. 21st, a regular meeting held in the Auditorium Lincoln School, Oakland, Calif.

Northern California Mineral Society

Three meetings, an open house, also a lapidary night were held by the Society during November, 1946. On Nov. 1st, a business meeting was held. On Nov. 3rd. an open house was held at the Society's rooms at 422 Belvedere St., San Francisco. On Nov. 15th, a micromount meeting. On Nov. 20th, a general meeting and on Nov. 29th, lapidary night.

Connecticut Valley Mineral Club
A regular meeting of the Club was held
Monday, Nov. 4th, 1946, at the Museum
of Natural History, Springfield, Mass. The
speaker was Arthur Montgomery, who gave speaker was Arthur intongomery, who gave a most interesting talk on the Harding Mine, near Taos, New Mexico, which he operated during World War II. The ore of the mine is microlite which occurs as tiny brownish xls, embedded, chiefly, in lepido-

The talk was illustrated with many fine slides showing views in and around the mine, which, by the way, is a large quarry. John Kitson, President of the Society, presided at the meeting.

Pacific Mineral Society
A dinner meeting of the society was held on Nov. 8, 1946, in Scully's Restaurant, Los Angeles, Calif., The speaker was W. Scott Lewis whose subject was "Geology and Natural Science of Sequoia National

The meeting was adjourned at 9:50 P.M. to enable members to examine specimens on

Purfied J. Kent, Secretary

Boston Mineral Club
A regular meeting of the club was held
on Nov. 5th 1946, at 28 Newbury St.,
Boston, Mass. The speaker was Prof, Marland P. Billings, of Harvard University, whose subject was "Geology of the talc-serpentine deposits of Vermont."

A field trip was taken on Nov. 10th to Devil's Den lime pit and the Shipman silver mine, both in Newbury, Mass.

Yavapai Gem and Mineral Society

Two events highlighted the month of October for the Yavapai Gem and Mineral Society of Prescott, Arizona: A successful rock auction and a field trip to Morristown for fossils. Plans were made for several nice mineral exhibits to be sent to the state fair in Phoenix, November 8 to 17, 1946, inclusive.

An interesting announcement was made that some of the junior members had organized a club called the Junior Rockhounds, for the purpose of training children under 12 in mineralogy and lapidary work, pre-paratory to their joining the Yavapai Society. Its officers are John Butcher, presi-dent; Larry Bender, secretary; and Tyler Nanette, chief helper. These boys are doing a good job.

Ida Smith, Sec. Book Dealers Issue New Catalogue

J. S. Canner & Co., 909 Boylston St., Boston 15, Mass., have just issued Catalogue 142 which embraces books and serial publications on geology, paleontology, mineralogy, crystallography, petroleum, mining, etc. It is a 52-page publication. Copies of the catalogue are free as long as the supply lasts.

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Wisconsin Goological Society

A regular meeting of the Society was held on Nov. 4, 1946, at the Milwaukee Public bir Nov. 4, 1940, at the Milwaukee Public Library, Milwaukee, Wisc. The speaker was Dr. Katherine F. Greacen, whose topic covered her experiences as an oil geologist for three years in the Texas oil fields. An oil picture "Deep Horizons," was also

Mineralogical Society of S. California

Two sound motion pictures from the Bureau of Mines were the feature of the November meeting of the Mineralogical Society of Southern California. The first "Manufactured Abrasives" "Manufactured Abrasives" told the story of the making and use of Carborundum and Aloxite grits, papers and wheels. In 1891 in his home laboratory in Pennsylvania. Dr. Atchison created the first glistening crystals of silicon carbide and named this new abor sincon carbore and named this new ap-rasive Carborundum. Its value was quickly recognized and in 1895 the Carborundum Company began large scale operations at Niagara Falls, N. Y., then as now using the power of the falls themselves in the manufacture of the abrasive. From vast furnaces huge masses of carborundum crystals are removed to be crushed, sifted and graded to the various sized grains and grits. Aloxite or aluminum oxide is also produced, toughness and sharpness being its particular qualities. Grinding wheels are manufactured. The abrasive grains are mixed with bonding materials, pressed together under great pres-sure and then fired or vitrified so that the bonding material melts and fuses together the grains of the abrasive. The resultant wheels are then tested., trued and shipped to thousands of industries where they help create the tools of manufacture-from massive parts of locomotives to precision instruments for cutting and faceting of gems.

The second picture "Lead Mining in Southeastern Missouri" gives a wonderful picture of mining in the most important lead producing district in the United States. This is the only place in the world where no other metals are associated with lead to any great extent. Since 1720 operations have been almost continuous. Today the huge chaff piles on the surface and the immense stopes or chambers under-ground connected by miles of tunnels attest to the tremendous amount of ore that man has already taken from this area. And still diamond drills probing below the surface 350-700 feet discover new ore bodies that keep the ore moving in an even flow from the mine to mill.

Pauline A. Saylor 2444 E. Bonita Ave. Covina, California.

Texas Mineral Society

The Society had a very enjoyable program

at its November meeting. Colored movies were shown by Messers. A. P. and F. N. Bentley of their recent trip through Colorado and Wyoming. Messrs. Copeland Salas and Churchill displayed some outstanding fluorescent materials. Mr. Raymond McIver gave a short talk on the technique of sanding cabochons and slabs by the improved sanders.

New Jersey Mineralogical Society

A regular meeting of the Society was held on Dec. 3, 1946, in the Y.M.C.A., West-field, N. J. The speaker was Humbolt W. Leverenz (R.C.A. Laboratories), whose sub-ject was "Phosphor luminescences in theory and practice."

Pomona Valley Mineral Club
THE POMONA VALLEY MINERAL
CLUB celebrated its first anniversary with a banquet Tuesday, November 12, 1946. Between forty and fifty members and guests attended

Mr. and Mrs. Ernest Chapman, members of the Pasadena Mineralogical Society, assisted in making it a memorable occasion by graciously entertaining the group with a lecture on "MINERALS OF LAS LAMEN-TOS AND SANTA EULALIA, MEXICO, which was illustrated with specimens and which was illustrated with specinicis and colored slides. Having done considerable collecting in Mexico, Mr. Chapman was ably qualified to give some first-hand information and advice to those anticipating a trip to that area.

In appreciation of their entertainment.

Mr. and Mrs. Chapman were presented with small gifts from the Club.

Edythe M. Thompson Pub. Chm.

Worcester Mineral Club

The Worcester Mineral Club brought its second year to a close with a Hollowe'en Party, at the Natural History Museum, after the regular meeting on the evening of Oct-ober 21st, 1946. Besides the delicious lunch, prepared by the ladies of the Club, a min-eral grab was held, each member bringing a wrapped specimen.

On Sunday, November 3, twenty-two members of the Club made a field trip to the farm of one of our members who had found an outcropping of feldspar on his land.

The annual election of officers was held at the November 4, 1946, meeting, with the following officers elected for the coming

Mr. Gustaf H. Fyhr, President. Miss Rosemary A. Smart, Vice-President. Miss-Susan G. Ayres, Secretary-Treasurer. Miss Gertrude Bryant, Librarian.

Mr. Evert Pearson, Curator.

Joseph F. Shea Pub. Chairman

Newark Mineralogical Society

Field Trip to Andover Iron Mines, Oct. 27, 1946.

34 members and guests were present. Material found, Azurite-Malachite, Magnetite, Calcite, Galena, Hematite, Muscovite, Chalcodite, Phlogopite, Quartz, Red Garnets, Jasper, Serpentine, Chrysotile, Limonite, Bornite, Lodestone.

The day was glorious and the trip was enjoyed by all present.

The 243rd meeting of the Society was held Sunday November 3rd 1946, at 3 P.M., in the Newark Museum Addition Lecture Room first Hoor North, 43 Washington St., Newark 2. N. I.

The meeting was called to order by the President, Mr. R. P. Milburn, who presided. Attendance 41.

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After the business meeting, following the Thirtieth Annual Meeting, Election of Officers and Trustees was in order.

Annual report of the Secretary, and Annual report of Treasurer were read.

Election of Officers.

President; Wesley H. Hayes; Vice-President, Paul J. Kellinghausen; Secretary, Louis Reamer; Treasurer-Mrs. Isabel S. Bemis.

To complete the Board of Trustees, Richard P. Milburn, and Vincent Giordano.

Program for the afternoon—"Collecting Chalcedony on the Silex Bed, at Ballast Point, Florida" by Mr. E. A. Maynard, illustrated by Kodachrome Slides. Mr. Maynard's lecture and Kodachrome Slides were enjoyed by everyone present. He told how chalcedony pseudomorphs after coral are found, partly embedded in the mud or often entirely so, and that they can be obtained at low tide only. The color of the chalcedony ranges all the way from pure white through tan, blue, brown, and red to a genuine black onex.

Mr. Maynard had on display many beautiful and attractive specimens, polished and unpolished.

A vote of thanks was tendered to Mr. Maynard for his instructive and educational lecture.

Louis Reamer, Secry.

1948 Mining Convention Sought

Efforts to bring the 1948 convention and exposition of the Western Division of the American Mining Congress to San Francisco, Calif., will be supported by the San Francisco Chamber of Commerce, it was announced on November, 8, 1946.

This is the result of action taken by the Chamber's Board of Directors on recom-

mendation of its Mining Committee.

The convention and exposition would be held during the latter part of September,

1948, and during the celebrations proposed in connection with the California Centennial.

International interest in the event is expected because of San Francisco's historic close relationship to the metal mining industry.

Minerals Exhibited at Arizona State Fair

More then 55,000 persons visited the Mines Building at the Arizona State Fair in Phoenix, November 8th to 17th inclusive, 1946, to see the exhibits from Arizona's mines, and the collections of rare minerals, semi-precious stones and gems exhibited by the rockhounds of Arizona. This was the first state fair since 1941.

During the war the whole state fair grounds were occupied by the army and the Mines Building was used for administrative offices. The permanent exhibits had suffered considerably during the several years of neglect making it necessary for a complete overhaul. The Fair Commission selected for this task Mr. Arthur L. Flagg, President of the Mineralogical Society of Arizona, naming Ben Humphreys as Assistant Superintendent. Members of the Society contributed many hours of volunteer work to assist in this stupendous task which occupied two months. The comment from visitors indicated that this exhibit was the most popular at the Fair and paid tribute to the ability and hard work of the executives and many assistants.

The exhibition was non-competitive. Several counties and the more important mining companies were well represented. These exhibits are held over from year to year, and occupy most of the 5000 square feet of floor space devoted to this year's show. Members of the Mineralogical Society of Arizona displayed more than 1500 choice mineral specimens, polished slabs and gem stones. The only other Arizona society participating was the Yavapai Gem and Mineral Society. It is expected that next year the exhibits, other than permanent material, will be on a competitive basis following up projected increased attention to minerals in Arizona schools.

Visitors were registered from nearly every state in the Union, South and Central America, Spain, British Columbia, England, France, Norway, Sweden, Italy, Australia, and China. Two superb fluorescent exhibits and special educations features highlighted the show, which was acknowledged to be the most attractive exhibit of its kind ever seen in the Southwest.

It is hoped that the Mines Building will be kept open at least the greater part of the year for the benefit of visitors as well as for home folks rather than just during the Fair period.

J. E. Shelton,

Chicago Rocks and Minerals Society

The Chicago Rocks and Minerals Society held their first auction at the Sauganash Field House, Chicago, Ill., on November 9. There was a very good crowd in spite of the heavy rain. Our members and friends made generous donations of material which covered both sides of five eight-foot tables. In addition there were three raffles and a door prize. The monetary return was extremely satisfactory.

Our very capable member, Mrs. Holtz,

Our very capable member, Mrs. Holtz, not only gave a very interesting lecture on the geysers of Yellowstone, illustrated with very beautiful colored slides, but she also headed the refreshment committee. In both these activities she was ably assisted by Mr.

Holtz.

There was much visiting with old friends and getting acquainted with new ones. There was a general departure about 11 o'clock, everyone being laden with bargains.

George Anderson, President.

Los Angeles Lapidary Society

The regular monthly business meeting of the Los Angeles Lapidary Society was held at the Royal Palms Hotel, Nov. 4, 1946.

Jack Streeter, a member, gave a very interesting talk on his trip to Brazil. Beautiful specimens of various minerals and gem material were shown to illustrate his story.

A small party of members went to Butte, Montana to get sapphires. Whiles no sapphires of worth were found, some really tall tales of the trip were related.

The September report failed to mention the lecture given by one of the Society's most learned members, Marie Lackie, Mrs. Lackie is a research geologist for the Shell Oil Company. Her talk on the "Geological Occurrence of California Agate" was interesting and very instructive.

E. Grace Peters. (publicity chairman.)

... With Our Dealers ...

Can you use some mica specimen? The Mineral and Gem Dealers, of Asheville, N. C., can supply many varieties.

Do you need a museum specimen for your cabinet? One of the many listed by John S. Albanese, of Newark, N. J., may be just what you want.

Note the lapidary units, gem drills and other lapidary equipment in the ad of Lapidary Equipment Co., Inc., of Seattle, Wash. Note their new address, too!

The Neuwerk Lapidary Shop, of Moline, Ill., will do your cutting and polishing (no faceting, however).

Some Christmas specials-gem minerals and gem books-are offered by the J. J. Jewelcraft, of Montrose, Calif.

More Arizona agates, jaspers, and petrified wood are featured this month by Chas. E. Hill, of Phoenix, Ariz.

Allan Branham, the jade specialist of Lander, Wyo., has an interesting article in this issue relative to a new jade find in his state.

A new type of agate, called "shadow" agate, has been found by R. L. Taylor, of Battle Mountan, Nev. You should order one or more of it.

Some West Texas agate specials can be obtained from Frank Duncan and Daughter, of Terlingua, Texas.

A new advertiser is Bay State Abrasive Products Co., of Westboro, Mass., who can supply lapidary wheels.

Priday Agate Nodules is a special this month of the Western Trader, of Sacramento, Calif.

To discriminating collectors who can afford the best, Harrison S. Cobb, of Boulder, Colo., can supply 3 choice specimens.

Some fine foreign specimens are listed this month by E. Mitchell Gunnell, of Denver, Colo.

Another new advertiser is Knowlton Minerals (Louis Knowlton, prop.) of Joliet, Ill., who can present a collection of teg different Mazon Creek fossils.

Long Beach Mineral & Lapidary Supply Co., of Long Beach, Calif., have some good Christmas gift suggestions.

High quality, slabbed gem material, can be had from Fred Roberts, Jr., of Monterey Park, Calif.

Another new advertiser is Wyoming Jade Co. of Cheyenne, Wyo., who specialize in Wyoming Jade. d

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Lionel Day, of New York City, announces the arrival of newly imported gem rough.

Books for Christmas gifts, suggests A. J. Alessi, of Lombard, Ill.

World's Minerals, of Oakland, Calif., can supply seven mineral collections.

Highest quality cabochon materials are offered by John B. Clarke, of Sunland, Calif.

H. Mick, of Morristown, Ariz., can supply twenty colorful Arizona minerals.

Still another new advertiser is Toupal Brothers, of San Jose, Calif. Note their ad.

Forrest L. Parmenter, of Charlestown, N. H., has on hand forty tons of Chinesered jasper. How many tons can you use?

If you need some agate jewelry try the Yaquina Gem Shop, of Newport, Ore.

Thompson's studio, Pomona, Calif., can supply some nice crystal groups.

Hermosa Gem & Mineral Shop, of Durango, Colo., has on hand two outstanding malachite specimens.

Gem and gem materials of all kinds are in the stock of John L. James, of Tonopah, Nev.

A number of interesting western Minerals are listed by Hermitage Lapidary Products, of Goldfield, Nev.

C. A. Weeks, of Meredith, N. H., has a nice offer of twenty pegmatite minerals from northern New England.

Ideal Christmas gifts are listed in the ads of Grieger's, of Pasadena, Calif. Read them and order!

Labradorite, choice gem quality from Labrador, is a special this month with the Mineral Foundation, of Tucson, Ariz.

Vincent Trescartes, of Elko, Nev., specializes in colorful opalite.

Geminlap Mart, of Milwaukee, Wisc., is featuring this month grinding wheels designed solely for lapidary use.

MaryAnn Kasey, of Prescott, Ariz., can supply nice Arizona agates and other minerals.

A. L. Jarvis, of Watsonville, Calif., has some nice tiger eyes, obsidians, and thunderegs in stock.

Killian E. Bensusan, of San Fernando, Calif., is an importer of foreign minerals and chiefly from Brazil.

Another new advertiser is R. S. Bateman of Seattle, Wash., whose offerings are choice specimens of petrified wood from Russell Forests, Wash.

In this issue appears the seventh list of fine minerals from an old collection—in the ad of Hugh A. Ford, of New York.

The Mineral & Gem Dealers, of Asheville, N. C., extend Christmas and New Year Greetings to all their friends.

Another new advertiser is Clarence A. Ames Co., of Portland, Ore., who are running a special for January only.

Burminco, of Monrovia, Calif., lists seven interesting western minerals. You should have everyone in your collection.

The ad of Stewart W. Hurlbut, of Salmon, Idaho, lists some crystals and rarities. Look it up!

In the ad of Lay-Art Gem Shop, of Boise, Idaho, appears this line—"Remember for Idaho gem materials try us first."

Grieger's of Pasadena, Calif., have in a stock some large diamond blades.

Two more lists of fine specimens are advertised by the Wiener Mineral Co., of Tucson, Ariz.

George T. Davey, of Van Nuys, Calif., can furnish brooch and ring stone gages.

The cut-off saw you've always wanted: is the caption of the ad for Felker Manufacturing Co., of Torrance, Calif.

Universal Minerals, of Los Angeles, Calif., have acquired a nice stock of some very fine Oregon Zeolites.

The Black Hawk Trading Post, of Black Hawk, Colo., have expert silversmiths to set your mountings.

Ward's, of Rochester, New York, have a long list of choice mineral specimens for collectors, The Demrick Lap is a new lapidary machine developed by Lloyd M. Demrick, of San Prancisco, Calif. Read about its many improvements!

The Colorado Carnelian Agate which was recently discovered by Wilfred C. Eyles and Oscar Gisler continues in its popularity. It is for sale by the Pan-American Mining Co., of Bayfield, Colo.

Mrs. Richard Fischer, of Grand Junction, Colo., has some museum specimens of limb sections replaced by Montana moss agate.

Are you getting regularly the Mineral Bulletin? This is a most interesting little journal—all about minerals—with fascinating stories about trips and specimens. Its editor is W. Scott Lewis, of Hollywood, Calif.

Warm Praise From Advertiser

Editor R&M:

We have closed our spectroscope business and it is now in other hands. Consequently we will ask you to discontinue the ad as

soon as the half year is finished.

I want to say that I have never had such a genuine feeling of cooperation and sympathy from any other magazine, and I feel a personal regret in this discontinuance of business relation. There is a personality in Rocks and Minerals that I have never found in another such publication. Good luck to you and your magazine.

Oct. 15, 1946

T. A. Cutting, Campbell, Calif.

Valley Well is California's Deepest

LOST HILLS (Kern Co.). Nov. 18.

—The California record for deep drilling was broken yesterday by the Pacific Western Oil Corporation which reported its National Royalties No. 1 wildcat, seven miles from Lost Hills, as being 16,278 feet in depth.

This shattered the Standard Oil Company's record of 16,246 feet for a wild-

cat near Cole's Levee.

The Pacific Western well is a "no dope" hole. It has had no fishing jobs and no serious mechanical delays. The total elapsed time since the well spudded in is 198 days.

The well's depth is surpassed only by an unproductive wildcat in Louisiana.

The Fresno Bee Mon. Nov. 18, 1946

The above item was sent Rocks and Minerals by C. A. Noren, of Fresno, Calif., who also informs us that Lost Hills is in Kern County, Calif., on the east side of the Coast Range and in the southwestern part of San Joaquin Valley.

LAPIDARY EQUIPMENT CO. PURCHASES NEW SEATTLE LOCATION

After Nov., 1, 1946, the new address of the Lapidary Equipment Company of Seattle will be 1545 W. 49th Street, just 2 blocks north and 1 block west of the

Ballard Bridge.

According to K. J. Hillquist, president of the company, the purchase of the new building will enable Lapidary Equipment Co., to consolidate both their retail store and manufacturing plant in one location. Extensive modernization and development plans are under way for the new building, and the move is hailed as a major advance in the progress of the company.

Sick Widow appeals for help!

Editor R&M:

I am the Jewish widow of Dr. Dipl. Ing. Willy Hirsch, Mineralogisches Institut, Furstenstr. 22, Munchen, Germany.

My husband died in Bolivia. I just returned "home" from the Dutch East Indies, and I

am very ill.

Dear Mr. Editor, will you please help me by sending me some food, fats, cigarets, clothing, stockings, (size 10), and shoes (size 42)

ing, stockings, (size 10), and shoes (size 42).

I will be very grateful for anything you can send me and in return, I will send you, as soon as I am able, some very beautiful minerals.

Dear Editor, please help me!

Mrs. S. O. Hirsch Furstenstrasse 22, Munchen, Germany.

Oct. 20, 1946

Editor's Note: Dr. Hirsch, who died on Aug. 14, 1939, while in exile in Bolivia, was for many years (and up to the time of his death) a member of the R. & M. A. He was one of the most prominent mineral dealers in Germany who through ads in Rocks and Minerals supplied collectors in this country with many fine specimens.

We hope that some of our readers may be

in a position to help Mrs. Hirsch.

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The Amateur Lapidary

ISN'T THAT A DAISY!?

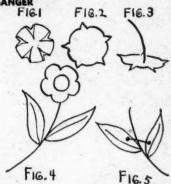
One of Mark Twain's favorite expressions was "Isn't that a daisy!" He used it as an exclamatory remark which always seemed to carry with it a hint of gentle ridicule. This was in the era of conversation pieces" but we do not know if he ever embarrassed any pompadoured lady by applying it to her jewelry. However, if he were alive today and looking at some of our costume jewelry we can imagine him using the term both as an exclamation and, at the same time, as a question. So this little posy, the recipe for which is given herein, will not be named.

Select a stone of solid color for the blossom. This should be about three-sixteenths of an inch thick. Select another color, which blends or contrasts well with the blossom, for the center. This piece should be thick enough to make a well-rounded cabochon. For our model we selected carnelian moss agate (rust color) and for the center, light green common opal which is a sort of greenish cream.

On the blossom piece use a quarter, or something similiar in size, for a pattern and draw a circle. Draw a smaller circle, size needed for center, on the other slab. Grind the blossom stone to the edge of the circle. Dry the stone and mark it into fifths for five blossoms. Put on the stone and cut V's to mark off the blossoms and extend the V on top of the stone to further separate the blossoms, as in Figure 1. Round the edge of the blossom and cabochon the outer edges of the blossoms. Leave the center flat and as untouched as possible.

Now make a cabochon of the smaller circle. Fit this onto the blossom to see if there is any change needed in either stone. Polish both stones leaving the center of the blossom unpolished and the bottoms of both stones unpolished. Cement the center stone to the blossom stone and put aside to dry.

Lay the blossom stone on twenty-six gauge sterling and mark around it. Re-



move and draw prongs between the blosoms. Saw out the piece but saw *inside* the blossom lines so that the silver blossom will be a little smaller than the stone one. See Figure 2. To the center of the bottom of this bezel, solder a piece of 18 gauge sterling wire which is about six inches long. See Figure 3.

From twenty-six gauge cut two sharp pointed leaves, one and three-fourths to two inches long. Put on pitch block and mark the center vein sharply. Turn over and raise the sides to give a natural appearance. Solder these leaves to the main stem as in Figure 4.

Place in warm pickle until clean. In the hollows of the backs of the leaves solder on a joint and catch of sterling or soft solder a metal pin. See Figure 5. Place in pickle, if the pin and catch is sterling and hard soldered on. But if metal is used with soft solder or if sterling catch and joint are used with soft solder, do not pickle as the solution will be ruined and the metal discolored. Do any smoothing with file or emery paper that is necessary.

Polish the high lights wherever the buff can reach. Some polishing will have to be done by hand. Wash in warm water and soap with soft brush. Set the stone by bending the prongs into the V's between the blossoms. If a higher polish is desired, the pin can be taken to a silversmith and silver plated.

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AN EPIDOTE FIND IN COLORADO

BY GUY B. ELLERMEIER Denver, Colo.

The writer takes pleasure in reporting the recent discovery of Epidote in the upper Elk Creek region, Park County, Colo., a locality from which no minerals have heretofore been reported. All credit for the discovery is due fifteen year old Tyke Meissner of Denver, Colo., and this is the genesis thereot.

During the last week in August, 1946, Tyke, his younger brother John, and Wendell Mohr—Boy Scouts and fellow members of our Colorado Mineral Society—were encamped with the writer on the bank of a little brook, tributary to Elk Creek. Though we were mineral collectors, and this hinterland was still unscarred by miners' pick and shovel, yet its rugged, forested hills were a delight to roam. If one moved with quiet tread, deer and elk might be flushed from cover any day; the solitude, unbroken by the raucous sounds of modern haste, was nature's benediction.

Moreover, we believed the region might afford minerals of interest to the collector, since the geological formation appears similar to that of the productive Pikes Peak region off to the southeast—composed essentially of a coarse-grained, disintegrated red granite, with mica-schist and gneiss appearing at intervals, and small pegmatite dikes common enough to excite the interest of a crystal collector. The pegmatites thus far examined, however, have yielded but a few inferior quartz crystals.

But not even pegmatites could enlist our interest after Tyke Meissner reported his discovery. In prospecting, our custom has been to wander separately, thus covering the widest range of territory possible in a given time. Should one of the party discover anything of interest he would report his find upon his return to camp. The attention of all could then be devoted to whatever find seemed most promising. In that respect Tyke's discovery reigned supreme.

Came the day when Tyke brought in several loose Epidote crystals, and many pieces of rock composed almost wholly of minutely crystallized Epidote. Moreover, implanted upon some of those rocks were fragments of what had once been crystals up to three inches in length. While prospecting at the base of a distant hill, a green crystal fragment attached to a small bowlder attracted his attention. Upon closer examination, Tyke identified the mineral—Epidote.

He then began a more systematic examination of the bowlder-strewn slope. Most of the bowlders were of granite, but here and there one composed of a dense, dark rock was encrusted with the green mineral, fewer still bore crystal fragments. Having collected such material as might conveniently be broken off with his prospecting pick, Tyke came in to report the find to his colleagues. The distance from camp to the Epidote hill was, he stated, a good hour's walk and steeply upgrade all the way.

It was apparent that if those bowlders could be traced to the place from whence they had come, ledge or lode might be found that would afford better specimens than could be obtained from float bowlders. After a hasty lunch we set forth, despite a steady rain—an almost daily event at those high altitudes. We carried with us tools that seemed appropriate if perchance our quest should prove successful: a six-pound double-jack hammer, two three-pound single-jacks, a two-foot drill, an assortment of cold chisels and square points.

Tyke led the way up and along the timbered flank of a sinuous ridge, finally down to and across a tumbling rill, thence to the base of a large hill where he had first encountered the mineralized bowlders.

The hike had been three long, acutely upgrade miles. According to Wendell's altimeter, our camp stood at an altitude of 9200', thus we estimated the altitude of "Epidote Hill" to be around 10500. Later, when we were able to observe the terrain from the brow of the hill, northward we could see the Pegmatite Points—good landmarks, these—standing redlybrown and bare of timber. Their proportionate altitude seemed to confirm our

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estimate. Away to the west, Bandit Peak, bald of summit and densely timbered of slope afforced not only a second landmark, but a reminder, as well, of an interesting chapter in pioneer history.

Our first endeavor was to trace those Epidote-bearing bowlders to their original source. Steadily working our way up the hill, we searched for and followed an echelon of bowlders which grew increasingly larger and more numerous as we advanced. Then, when near the summit, all trace of Epidote-bearing rock disappeared! Going on to the crest, we found there only huge granite blocks, not a sign of mineralization or metamorphism.

Retracing our steps to half way down the hill, we renewed the search, and when again within some fifty yards of the summit, we literally walked into an Epidote-bearing schist that outcropped like a rugged, broken wall. That so prominent a wall had previously escaped observation was due to the dense growth of scrub quaking aspen, interspersed with dwarf pines, which clothed the hillside and limited the view to a few steps in any direction.

The schist wall varies in height from over six feet to ground level; as nearly as we could determine, the schist outcrops for a distance of fully thirty feet, having a width in excess of ten feet, though we could not always be certain just what was rock in place and which were huge, prone slabs broken from the wall.

Here we brought the tools into service, working to secure matrix specimens, though John was somewhat inclined to search the ground for loose crystals, an endeavor in which he was quite successful. One of the neatest spcimens obtained is about the size of a flatiron, the matrix being of mingled quartz and green schist with a quartet of inch-long Epidote crystals grouped in a depression. Incidentally, some of these specimens were displayed at the October meeting of the Colorado Mineral Society; and Tyke has presented the Colorado State Museum with a specimen, their first Epidote from Park County.

The Epidote crystals vary in size from microscopic up to a length of three inches, some being an inch broad. A few are black, though most show the characteristic pistacio-green. Vugs in the schist—here a dense, hard rock containing-very little visible mica—produced the best specimens since there was less liklihood of breaking crystals when splitting the rock.

Associated with the Epidote were Quartz, Garnet, Hematite (probably) and an unidentified mineral. The Quartz occurs both massive, filling crevices, and as clustered crystals, up to a length of two inches, lining vugs. Some crystals are milky, but most range from clear to cloudy, and are often stained brownish yellow. The tarnish, however, may easily be removed by soaking in oxalic acid. A few small sagenitic crystals were found; the inclusions being acicular Epidote.

The Garnets occur sparingly and apparently in but one section of the schist wall. They are red in color, and vary in size from pin-head clusters up to more than a quarter inch in diameter. The few obtained were invariably "frozen" in the Quartz that filled crevices in the schist.

The Hematite (probably) occurs in the form of minute cubic crystals, and as a stain on Quartz. Our time being limited, we lent scant attention to the iron minerals.

The unidentified mineral, pea-green in color, occurs as radiating crystals implanted on schist and in Quartz. Specimens were laid aside, but upon our return to camp we found that our load of tools and Epidote precluded bringing more than one specimen. That specimen has been sent to the Colorado School of Mines for identification, but at the time of this writing their report has not been received. We think the mineral may be Pyrophyllite, or possibly radiated Actinolite.

Conclusion

We doubt if minerals of commercial use are to be found there; we do know that from the collector's veiwpoint "Epidote Hill" and the country close by are worthy of serious attention. Our work in the locality was during the last week in August; at that altitude snows fall early in September, thus precluding a return trip this year.

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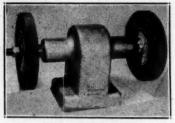
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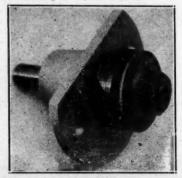
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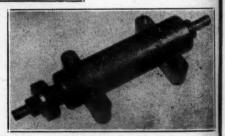
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The Editor

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BRILLIANT CUT ZIRCONS (blue and white), Rare Cameos 16 x 12 M/M size in Rock Crystal, rare blue Obsidian, rare Jade, Carnelian, mother of pearl and Tiger Eye. Rare old mosaic stones in landscapes. Finest blue Starolites, Moss Agates and Snowflake Obsidians, carved Obsidian 50c each. Cabochons in Jade and Emeralds. Aquamarines and Tourmalines, precious Topazes and Quartz-Topazes. Rare old Cameos. Onyx drops for earrings. Egyptian Peridots. Many others. What are your wants?

ERNEST MEIER

CHURCH ST. ANNEX P. O. BOX 302

NEW YORK 8, N. Y.

Books for Xmas Gifts

Handbook of Mica-Chowdbury, \$6.00
The Microscope and Its Use—Munoz, \$2.50
Fluorescence and Phosphorescence—Hirschlaff, \$1.75
Principles of Field and Mining Geology—Forester, \$7.00
System of Mineral Dynan, \$10.00
Handbook of Mineral Dressing — Taggart, \$15.00
Presspection and Operation

\$15.00 mineral Dressing — Taggart,
Prespecting and Operating Small Gold Placers
—Beericke, \$1.75
Handbook of Minerals—Butter, \$5.00
Handbook of Minerals—Butter, \$3.50
Handbook of Blowpipe Analysis — Butter,
\$1.50
Book of Minerals—Hawkins, \$1.75
Elements of Mining—Lewis, \$6.00
Gems and Gem Materia's—Kraus, \$3.50
Mineralogy—Kraus, \$5.50
Revised Lapidary Handbook—Howard, \$3.00
Metalcraft and Jewelry—Kronquist, \$2.75
Jewelry, Gem Cutting and Metalcraft—Baxter,
\$3.00
Send far nam Metalcraft

Send for new list of Gem Cutting Material and Findings.

A. J. ALESSI

430 S. Highland Ave. Lombard, III.

ARIZONA AGATES

Pink or light Blue Agates, also Jaspers, in the rough, 50c lb. Moss, small beautiful pieces, 85c lb. Other lovely colored and patterned agates, Dendritic Fern Jasper, in the rough, \$1.00 to \$5.00 lb.

SAWN, UNPOLISHED SLABS

Cabinet agate20c sq. inch. Gem Agates; starry night and snowflake Obsidian; Jaspers, etc. 35c to 50c sq.

Polished half NODULES 75c to \$2.00 each.

Thick, walled, whole Geodes 4 for \$1.00. Some fluoresce. Exquisite Canadian Gray Gypsum Roses 50c to \$2.00. Apache Teardrops, 15 for \$1.00; \$2.00; \$3.00 according to size. Also other mineral specimens. Write for prices.

Minimum order \$1.00. Postage EXTRA on all.

MaryAnn Kasey

Box 230

Prescott, Arixona

GEMS AND GEM MATERIALS

Good cutting material, agates, jaspers, geodes, amygdaloids, chalcedonies, agatized and opalized woods, algae, obsidian, Nevada Wonder Stone, etc. Mixed or straight lots \$1.00 lb.—5 lbs. \$3.50—10 lbs. \$6.00—20 lbs. \$10.00.

Slabs from above materials 20c sq. in.—20 sq. in. \$3.50—50 sq. in. \$7.50 -100 sq. in. \$12.00.

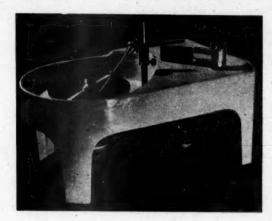
Cabochons and facet cut stones of all kinds.

Write for price list of cutting materials, mineral specimens, fluorescent materials, gold and silver jewelry, etc.

JOHN L. JAMES

TONOPAH

NEVADA



DEMRICK LAP

This is a new machine built around the horizontal lap (which is by all odds the best type) with many improvements over other contemporary machines.

- The body of the Demrick Lap is a ONE PIECE ALUMINUM CASTING weighing 31 pounds. It will not develope cracks, warp, rust or wobble as wood or built-up tin units are want to do.
- ALL phases of the lapidary art can be performed on this one machine; sawing, grinding, sanding and polishing. Any type of cut; cabochons, faceted stones, spheres, etc.
- Designed to take 12" laps but as most work can be done on 10" ones these are the laps normally used.
- Sawing is done using the attachment laying to the right of the post. It fits on the post and has BUILT-IN SELF FEED.
- The post is used in facet cutting also, being arranged to accommodate the Sperisen Faceting Head in particular.
- The spindle has a 56" thread with double sealed greased-for-life ball bearings. Four step cone pulleys for speed adjustment.
- 7. Weight, less motor, 48 pounds. Height 121/4", length 271/4", depth 161/2"; a very small size for such a big machine.
- 8. SECRET DEVICE! (not shown). You will constantly be using this accessory in all phases of work. It is part of the machine and will make your work easier, make it faster and more accurate. When you unpack your sparkling new DEMRICK LAP you will look at this doo-dad and say, "Gee, why didn't someone else think of that before!"

No motors available at time of writing but our hopes are high for the near future. Complete line of laps and accessories.

LLOYD M. DEMRICK

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Assured satisfaction is yours in your cutting hours with the new, heavy duty, sturdy **STREAMLINER.**

Since its introduction in 1936 this precision diamond sawing machine, developed by Wilfred C. Eyles, has won increasing respect among rock and gem cutters who appreciate better equipment.

Now in its latest form, perfected in collaboration between Mr. Eyles and Hyatt Lapidary Equipment Co., the new **STREAMLINER** offers many improved features to insure satisfaction.



STREAMLINER W

HYATT LAPIDAR

BOX 366 E. S. D., SAE

NER RESULTS FASTER





- Specially designed arbor permits maximum cutting area on saw blade.
- Heavy vise, faced with best grade belting leather, holds material from slipping regardless of shape and prevents damaged saws.
- 3. Adjustable gravity feed assures precise, sensitive cutting control.
- 4. Calibrated scale permits setting vise to bring off slabs to 1/64" uniformity.
- Tight, all-metal construction designed to prevent splash. No fear of getting clothes oily while working the STREAM-LINER.

Many other features are included such as handy front gate, cut-off table for sliced material and rigid, synchro-lateral feed.

Complete line of heavy duty lapidary equipment soon in production.

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Ask about the **STREAMLINER** faceting head. It's new. It's revolutionary. SEND FOR ILLUSTRATED CATALOG.

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Nothing makes a better Christmas Present for a ROCKHOUND than a good book on Gems and Minerals. Here are some of the finest to be had; order them early.

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By J. Harry Howard. Price \$3.00

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Getting Acquainted With Minerals. By G. L. English. Price \$2.50

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Gems and Gem Materials. By Kraus & Slawson. Price \$3.00

Handbook for Prospectors. Nothing better. By Von Bernewitz. Price \$4.50

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Experimental Atomic Physics. By Harnwold & Livingood. Price \$5.00

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We have sold the **MINERALIGHTS** since they were first manufactured. There is nothing better that we know of, but if interested get your order in early, as there will NOT be enough go around this year. Price from \$24.75 to \$175.00.

Send for colored catalog if interested, but do it early.

Special—For Christmas only. Twelve samples of fluorescent minerals, for long wave lamps; average one by two or larger \$10.00.

Also Special—Twelve samples of Fluorescent minerals one by two or larger for short wave lamps—\$10.00.

If you do not have a long wave lamp and desire one, we will ship one with any of the orders for Long Wave minerals, at the added amount of two dollars for the lamp.

Perhaps YOU, TOO may make a fortune, by locating a SCHEELITE deposit with the Black light (Ultra Violet). It is claimed over one hundred million dollars worth of Scheelite, has already been located by the Short wave Mineralight.

REMEMBER-You can always DO BETTER at

THE WESTERN MINERAL EXCHANGE

320 MADISON STREET

SEATTLE 4, WASH.

Too Late for Xmas But NOT TO LATE for The New Year

To start the New Year right we offer for this month our first 1947 Special.

PRIDAY AGATE NODULES:

We made it in time, before the snow started, to get a good load of these nodules from the well known Priday Ranch in eastern Oregon.

As long as they last we offer them in lots of 10 nodules average size 2 inch in diameter. Every one guaranteed to be filled with agate, for only

\$2.25

and **POSTPAID**, any where in the U. S.

Think of it, 10 whole nodules postpaid for only \$2.25!

You will have some real fun in cutting these nodules.

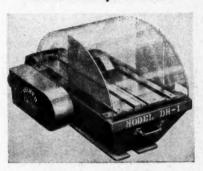
The Western Trader

2003-59 St., Sacramento 17, Cal.

(for the cutter, clear compact agate, Oregon, per pound 30c postpaid. Minimum order 10 lbs.)

NOW

The Cut-Off Saw You've Always Wanted!



Felker Di-Met Model DH-1

Cut-Off and Trimming Saw

Uses 6" or 8" "Rimlock" diamond blades. All-metal case, chromium plated bed, precision ball-bearing spindle. Coolant is self-contained. Baffles confine churning and splash. Optional plastic cover for greater cleanliness. Precision workmanship throughout. Accurate slice-thickness guide. Price, less motor, without plastic cover: \$63.50; with plastic cover: \$69.25. For descriptive circular write



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> Next Month: See our UNI-LAP

B-R-A-N-H-A-M-'S

Colorful Items For The Holidays: Rose Pinks in Black Rhodonite: The Blue Greens and Apple Greens of Gem Variscite: The Delicate Greens of Wyoming Jade: The Luxuriant Colors of Autumn Leaves in our new Gem Wood: The Robin's Egg Blue of Our Nevada Turquoise Nuggets and The Blue of the Arizona's Skies in our Chrysocolla. All these go to make a lasting colorful Xmas present for him or her.

- JADE—Our regular light green—Not the new kind—One nice slice \$2.75
- RHODONITE—The most beautiful Rhodonite in America—Polishes beautifully—
 Vivid pink curdled in coal—Black manganese—Solid—No fractures—
 Pound \$1.75

- TURQUOISE—Sky blue Nevada nuggets—One of the oldest gem stones—rich in Indian Lore, rich in color, rich in traditions, favorite of the Western States,

 Turquoise is your identification as a westerner. One nice firm

 \$3.50
- NOW FOR XMAS, and to show our appreciation of your long and continued patronage, we will send you all of the above items, postpaid anywhere in U. S. for \$20.00, and each and every one taking the entire deal, will, in addition, get one whole pound of our No. 1 high grade Tiger Eye, ten nice Lake Superior agates, six geyser fragment agates and five nice Apache tears. Anyone wanting the highest grade Tiger Eye separately by the pound we offer it at the low price of \$3.50. We can furnish it in any amounts. Quantity prices on request. Please do not order less than \$3.00 worth, and less than the whole lot will require postage. PLEASE GIVE US UNTIL THE 15th OF JANUARY TO GET OUT YOUR ORDER AS THIS DEAL REQUIRES A LOT OF SAWING, ALSO WE HAVE TO GO OUT AND QUARRY OUT THE NEW JADE.

MONEY BACK IMMEDIATELY IF NOT SATISFIED.
THANKS, AND MERRY XMAS AND A HAPPY NEW YEAR.

ALLAN BRANHAM

BOX 562

LANDER, WYOMING

ARIZONA AGATES, JASPERS, PETRIFIED WOOD

DECEMBER, 1946, is here and my fine gem stock is ready. Send your orders in early and they will be filled at once.

WE have fine Arizona petrified wood in number one gem agate with real pictures throughout each chunk. This comes in all colors, black in white, black in red, etc. We also have some rich high color gem agate petrified wood with all colors mixed through. This wood can be cut across the grain or with the grain to make beautiful gems, ash trays, book ends, etc.

PETRIFIED WOOD sold in sliced orders as follows:

Fine picture gem 75c to \$15.00 per square inch;

Rich high color wood from 50¢ to \$10.00 per square inch depending on the picture;

25 square inches of fine mixed number one gem slices \$26.00 postpaid.

RICH high color petrified wood in mine run is \$3.00 per pound; 5 pounds \$12.00;

10 pounds \$20.00. Large discount will be given on large contract orders only.

ARIZONA agates and jaspers come in many beautiful rich deep colors with flowers, ferns, moss, some plume and pictures sold in slices and priced as follows:

Real rich colored flower agate \$3.00 per square inch in slices;

Rich colored moss agate \$2.00 per inch;

Mixed colored agate \$1.00 per square inch;

25 square inches of mixed sliced gem agates and jaspers \$26.00 postpaid.

MINE run Arixona agate, jaspers, and petrified picture wood in rich high colors, \$5.00 per pound; 5 pounds \$20.00; 10 pounds \$35.00. Flower and plume sold only in slices. There will be some flower and fern mixed with the moss in some chunks. When we sell rough gem material we do not saw the choice out.

CHUNKS and ends with one sawed surface are 10 for \$10.00. These come mixed in jaspers and petrified wood. Chunks of polished petrified wood agates and jaspers around ½ pound at \$2.00 each postpaid.

SMALL and large chips of Arizona agate, jaspers, and petrified wood are 10 for \$3.00; 20 for \$5.00; 50 for \$10.00; 100 for \$18.00; 5 pounds for \$12.00; 10 pounds \$20.00. State which you want when ordering—agates, jaspers, or petrified wood.

Satisfaction Guaranteed.

Postage, Express, Freight-Extra.

CHAS. E. HILL

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SULPHUR
REALGAR—ORPIMENT
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Rock garden, patio, and building rock by carload lots. Write for wholesale and retail prices.

When going through Battle Mountain stop at the Nevada Hotel and see our display.

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BOX 234

BATTLE MOUNTAIN, NEV.

FOR RENT

This space by the month or year. Inquire of

ROCKS and MINERALS.

THE DESERT RAT'S NEST

Will reopen with a good supply of minerals sold under the old guarantee but I shall cater mainly to facet and fine cabochon cutters. Third Brazil shipment now in—all first grade gem material. Amythyst, andalusite, golden beryl, chrysoberyl, Brazilian almandite garnet, blue and white topaz.

Now in, a Ceylon shipment of gray and gray star-sapphires, and moonstone. Will wholesale some. On hand facet material, Australian sapphire, Montana garnet and sapphire, small Mesa Grande bicolor green and rose tourmaline. On hand Cabochon Finest aventerine for stars, star garnets, star sapphires Ceylon moonstone, poor grade Mexican opal, green and golden beryl, topaz blue-green-white, aquamarine, Brazil green tourmaline, Mesa Grande tourmaline, Amythyst, citrine, Tigers eye, rutilated quartz, 3 colors rutile, tiny blue tourmaline in quartz, saganite, Sweetwater agates.

Lots of specimens. Tell me what you want. No list.

Just arrived. Big non-fire cherry and red opal. New Mexican discovery.

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Patent Applied for

- ROCKHOUNDS: You are invited when visiting the Pacific Coast, to stop at the Western Mineral Exchange in Seattle, Washington; 320 Madison Street and look over the largest Mineral Collection on the Pacific Coast.
 - Also, you will be interested in seeing the latest in arbors; both for saws, and for carrying the full equipment to start on a rough piece of material and finish it to final polish without changing a wheel, or moving from the machine—SAY THAT IS SUMPIN!

- UNIVERSAL BALL BEARING LAPIDARY HEADS 4 Models
 No. 1. 12" long from 1" shafting. Carries 2 wheels up to 12" diameter and 2" thick. Or takes two 2" x 12" drum sanders. Wheels or sanders interchangeable. Solid aluminum base. S. K. F. or Ahlberg ball bearings. For lifetime smooth, noiseless service. . . .
 - No. 2. 131/2" long, from 1" shafting. Carries two wheels or two drum sanders as above, but shaft projects 34" on each side to carry two face sanders. Otherwise same thru-out as No. 1.
 - 161/2" long from 1" shafting. Carries either two 2" drum sanders or two 2" thick wheels inside the bearings. Carries two wheels or two drum sanders outside bearings (or 4 wheels or 4 drum sanders). Drum sanders on the outside may be used for both drum and face sanding without changing. All items fully interchangeable.
 - No. 4. Universal Lapidary Shop in one machine. 21 inches long from 1" shafting. Carries two wheels up to 12" x 2". Carries two drum sanders, and 2 face sanders. Six operations on one head. All items fully interchangeable. Drums may be carried inside or outside the solid aluminum base. S. K. F. or Ahlberg Sealed Ball Bearings.
- FLUORSPAR GROUPS. Many from Missouri in fine coloring; blue; violet cream, and mixed colors. Groups only, and prices from one to ten dollars each specimen. All will be sent prepaid, if cash is sent with order, and we guarantee satisfaction. Many of these are fluorescent under some of the fluorescent lamps. Smallest shipment under this offer is \$5.00.
- Lists of lapidary equipment, as well as lists of minerals and supplies gladly sent on request, and Remember, You Can always DO BETTER at

The Western Mineral Exchange

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The Largest Mineral House in the West.

NAVAJO INDIAN SILVERSMITHS

We have expert Navajo silversmiths making jewelry to order. Rings, bracelets, pendants, brooches, earrings, etc. Have your cabochons mounted in coin silver mountings.

We also do commercial rock cutting of all kinds. Our stock includes both raw and finished picture petrified wood and turquoise cabochons, petrified wood slabs, Navajo and Zuni handmade jewelry, rugs and other Indian crafts.

Wholesale and retail. Prices on request.

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SIMPLIFIED
2nd Revised
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By O. C. SMITH, A.B., A.M. Price — \$3.50 — Plus tax in California

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We have them in stock all the time up to 24 inches. Felker Di-Met Industrial Diamond Blades.

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24"																				.\$35.50
30"	1	3	1	w	e	e	k:	5	d	le	li	V	el	ry	1)					. \$86.60
						. '	V	1	e	1	A	S	0		St	0	cl	k		
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State Arbor Hole Size

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Arizona Specimens including Amèthyst Crystals, Agate, Chalcedony Roses, Geode, Thunder Egg, Wonderstone, Copper Specimens. Postpaid \$2.00.

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Designed to Visually Demonstrate
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SEDIMENTARY AND ALTERED
ROCKS (common, useful). Box of
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THE COLLECTOR—Specimens for Field Work, plus type gem stones, building materials, many rare minerals, 100 pieces, 1" plus, wooden box \$20.00

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CUT SYNTHETIC STONES

Oct. Fac. Ruby	mm \$4.00 each
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Round White Sapphires and rubies 2 to 10 m	
FOR THOSE WHO LIKE TO CUT THEIR OWN	WE OFFER AT A

NON-COMPETITIVE PRICE:—
SYNTHETIC BOULES—250 KT. ASSORTED—\$5.00

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White Topax—Oct. 33.55 kt	00 per kt.
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Amethyst—Extremely fine oval—160 kt\$	700. stone
Large Moonstones—To 25 kt. sizes\$1.	50 per kt.
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ROUGH TIGEREYE—Choice grade for cutting eyes— \$2.50-\$5.00 per lb.	

NOTE:—All above subject to 20% Federal Tax unless resale exempt. Our "Surprise Package" offer of 10 used diamond blades still available—\$5.00

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Gem Materials, Cabinet Specimens, Fluorescent Materials, Cut Stones, Mineral Books, Indian Silver Jewelry, Lapidary and Silver work to order. Too much to list. Write your wants.

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ROCKY MOUNTAIN MINERALS—Classified and mounted in attractive box—24-one inch mineral specimens—\$1.50; 18-one inch mineral specimens—\$1.00; 15-three-fourths inch specimens 75c Postage prepaid. If you want good showy minerals at moderate price, write for list. Black Hawk Trading Post, Black Hawk, Colo.

MUSEUM SPECIMENS

Exquisite flawless slabs of a complete limb section replaced by Montana Fortification Picture Moss Agate showing distinct rings. The moss resembles many flying aeroplanes.

Size 4 x 5 inches, \$40.00. Only a limited number.

MRS. RICHARD FISCHER

BOX 555

GRAND JUNCTION, COLO.

Newly Imported Gem Rough For Faceting

Tourmaline: Brazil, green and blue crystals, $\frac{1}{2}$ to $\frac{1}{2}$ inches long by $\frac{1}{8}$ to $\frac{1}{4}$ inch in diameter. For flawless gems of good color.

From 25c to \$3.00 each.

Madeira Quartz-Topaz: Madagascar, crystal fragments of the rare sherry wine color. Will cut fine gems of up to 5 carats.

From 25c to \$5.00 each

Amethyst: Brazil, Madagascar, fine color, evenly distributed.
Will cut flawless gems of up to 30 carats. Massive chunks.

From \$2.00 to \$25.00 each

Garnet: South Africa, pyrope, bright red, for cutting good gems of up to 10 carats. Massive chunks.

From 50c to \$2.50 each

For Cabochons

Sodalite: Ontario, bright blue, large pieces . . \$1.50 per pound

Rose Quartx: Brazil, large pieces, fair color .75 per pound

Rubellite: Brazil, small bright red pebbles 25 each 20% Federal Tax and Postage Extra.

Approvals available upon receipt of references or deposit.

LIONEL DAY

3657 BROADWAY

NEW YORK 31, N. Y.

Mail only, please!

CHRISTMAS SPECIALS

10 assorted roughed—in cabochons, ready to sand and polish, \$2.25. Group No. 1 is for jewelry only; group No. 2 also contains specimen cabs. When reordering, please list specimen cabs to avoid duplication.

2 roughed—in double cabochon agate heart pendants, \$4.00, ready to sand and polish and vertically drilled.

Pendants polished and neatly boxed \$6.00 to \$12.50, depending upon size and material. This includes heart pendants as well as sterling mounted ones.

We can supply roughed—in bracelet stones of the following materials, \$2.00 each, ready to sand and polish:

Agatized wood; Utah jasper; moss agate; jade; rutile quartz, tiger eye, variscite.

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Hand-Made and variously styled, fitted to any shape and size cabochon or rough material you send us. Price \$2.00 to \$5.00.

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TIGER EYE, Africa \$4.00 per lb.
PURPLE IRIDESCENT OBSIDIAN, \$1.50 per lb.
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OREGON THUNDER EGGS from the "Blue Bed" **50c** per lb. Agents for Felker's Di-Met Saw Blades, RX lapidary machines, Highland Park Slabbing Saw, Trim Saw, Drill and Ball Bearing Arbors. Sanding cloth, Carborundum wheels.

CERIUM OXIDE \$2.50 per lb.

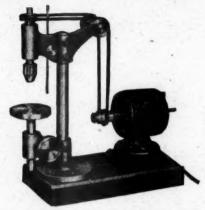
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A universal drill press the proper size for drilling gems, jewelry and model makers. 11 inches high.

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Departure sealed (no oil) ball bearings. Jacobs key tightening chuck. 3 drilling blocks (V, cone and cup). Motor pulley and belt.

\$37.50 WITHOUT MOTOR

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Oilite bearings, hand tighening chuck. 3 drilling blocks, (V, cone and cup). Motor pulley and belt.

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You may use any motor you may have. We furnish the pulley for your motor for the proper speed at no extra cost. Be sure and give your motor shaft dia. and R.P.M. when you order.

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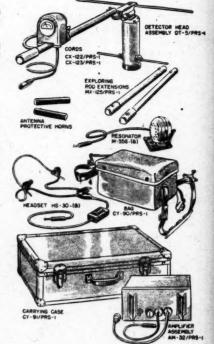
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NEVADA GEMS

P. O. BOX 94

BATTLE MOUNTAIN, NEVADA

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Diamond Saws

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FOR LAPIDARY WORK these saws are ideal and will give excellent service. These saws have been checked and closely examined in our own shops, and defects corrected. A liberal amount of diamond grit has been incorporated into these saws.

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Postage 25 Cents Extra

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Also 500 8" assorted radar plant saws, priced from **50c** to **\$3.00.** The latter are practically unused, while you should get at least 300 inches of cutting from a **50c** blade. Your money goes furthest in these fine saws by Di-met.

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University of Illinois
9 pages

Reprinted from the June, 1939, issue of ROCKS AND MINERALS

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ROCKS AND MINERALS

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Burminco

- WULFENITE: From the Red Cloud mine, Yuma Co., Arizona. Crystals of this famous red wulfenite are well known to all serious collectors. They exhibit beautiful crystallization and beautiful color. The old locality is very difficultly accessible and the material rarely seen on dealers' shelves. Our crystals are not large—from ¼" to ½" on matrix. They are excellent specimens. Also, single crystals in the above sizes from 15c to 75c depending upon color and size. Order several and put them in Riker mounts. Matrix specimens from 1" x 1" to about 5 sq. in. of display face—50c to \$2.50.
- BENITOITE—NEPTUNITE—JOAQUINITE: California. We need not tell you about the rarity of these. Most of the specimens run from 2 to 3 sq. in. of display face. The well-formed crystals occur on natrolite. The benitoite fluoresces blue. There are matrix specimens of benitoite alone; of benitoite and neptunite; of neptunite alone; and usually joaquinite alone or with neptunite. These are good and at a good price. \$1.00 to \$2.00 depending upon size.
- BASTNAESITE: New Mexico. See the Aug-Sept., 1945, issue of the AMERICAN MINERALOGIST MAGAZINE for a write-up on this. A fluo-carbonate of the cerium metals, this is no beauty for looks, but its rarity is undisputed. Crystalline yellow masses in brown groundmass at 50c per sq. in. of best display face. 10 or more partial crystals in vial—35c.
- ALURGITE: Dana lists only one locality for this potassium—magnesium mica with manganese—The Piedmont, Italy. But, we also have it in California. It is pink in color, schistose in structure, and not particularly attractive, but we'll bet you don't have one. Get it now at only 10c per sq. in. of best single display face.
- **GRAPHITE:** We advertise this because of the excellent quality. In bright, dark lead gray, crystallized, columnar masses from a Dana locality in Montana. We haven't seen finer material from any U.S. locality. **10c** per sq. in. of best display face.

WRITE "CATALOG" ON A POSTCARD AND MAIL IT TO US TODAY! Our continually up-to-date catalog is unique and lists many choice minerals. It will list gem materials and a complete line of lapidary equipment. IT IS FREE. DO IT NOW.

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BLACK DEVIL DOPPING WAX

Sticks like Hell—your cabochons can't get away from the old BLACK DEVIL. Special ½ lb. INTRODUCTORY OFFER—50c Once you try it—you'll always buy it

ORGEON AGATE COLLECTORS ATTENTION—We will send you 1 lb. of top Gem Grade Tiger Eye worth \$4.00 per lb. for 8 lbs. of Priday Ranch Thunder Eggs or for 12 sq. inches of good solid red or green Moss Agate. You prepay postage and we prepay postage on the Tiger Eye. Tiger Eye offered in exchange for other good materials—what do you have to offer?

ORANGE FLAKE SHELLAC—A very scarce item. Optical grade Orange Flake Shellac \$2.00 per lb or 1/4 lb, for 60c.

SPONGE RUBBER FOR PACKING SANDERS AND POLISHERS. Finest quality compact 1/4" Sponge Rubber. 6 x 6"—50c; 8 x 8"—75c; 10 x 10 or 12 x 12"—\$1.50

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CUT GEMS OF ANDALUSITE—A real rarity. A gift that will thrill the collector \$8.50 for stones averaging $\frac{1}{2}$ carat.

EMERALD BRAZIL—Genuine Emerald, but of light color. Typical Emerald Green such as is seen in no other gem. 3×5 mm Rectangular Facet gems. \$2.00 SUPER XMAS SPECIAL—Clear Hearts of Lucite enclosing a lovely piece of Australian Fire Opal. Complete with Sterling Chain \$3.00, Gold Filled Brooch Mounting worth \$1.50 to \$2.00 set with Lucite and Fire Opal — \$3.00. These are worth from \$6.00 to \$7.00 each.

AMETHYST—Brazil—Just arrived large crystals of flawless facet stock. Priced at 4c a carat. In choice crystals of light to medium color at \$1.50 to \$2.00 each. Best buy we have ever received from Brazil. Add 20% Federal Tax.

FACET CUT AMETHYST—Brazil. 10×12 mm rectangular facet gems of superbrich color. Perfect Gems. Special at only \$10.00 each. Plus 20% Federal Tax.

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CEYLON MOONSTONE-Showing good bluish chatoyancy-special \$1.50 each

YELLOW BERYL—Brazil—Facet cut gems at \$3.50 to \$7.50 per carat depending on color. MORGANITE, AQUAMARINE, and odd greenish colors of BERYL are also in stock. A special mimeo list will be made on all these gems—send for copy if interested.

PIN BACKS—Can be had either in Brass or Nickle Plated Brass. These can be soldered on the back of the brooch. They consist of a strip of metal on which is fastened a hinge, pin and safety catch. Just what you have wanted for a long time.

1"-10e each-75e doz.; 11/4-121/2e each-\$1.00 doz.; 11/2-15e each

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1633 EAST WALNUT ST.

PASADENA 4, CALIFORNIA

NEW OFFERINGS FOR THE GEM CUTTER:

Slabs. From Utah. We offer many new types, in approval assortments. This is the way to buy—we send to your deposit, any number of the following: fine fluorescent agate, black agate, or mixed black and clear, jasp-agate, moss agate (in a variety of nice colors), plume agate (including the new rare and beautiful white plume), and fine mossy colorful jaspers. Also a beautiful new jadeite from Alaska. They are priced from 10c to 50c per sq. inch. You pay for only what you wish to keep. Add to above one just in: slabbed Amethyst.

For the collector. Read your Dana, then order this new one: Golden peridot. This is from Utah, too, and a rarity. \$2.00 per ct. A few of faceting quality at \$5.00 per ct.

Pyrite XIs. These are large cubes and twins. The latter are in groups from twins to multiples of as many as ten intergrown. They run in size from $\frac{1}{4}$ " to $1\frac{1}{2}$ " in size and are perfect. Any collection will find them adding class and interest. Priced from **25c** to **\$1.00**.

Topax. Both pure white and fine orange. These come from the Famous Topaz Mountain of Utah and have the brilliance of a diamond. Five assorted for \$1.00. A few only facet quality to special order.

Beautiful red Vanadinites: From Arizona. Perfect xls, above average size. 1" x 1" 25c, 1" x 2" 40c, 2" x 2" 75c, 2" x 3" \$1.00. Some museum size pieces available. These will gratify you.

If you have any need in minerals, remember; we have the largest mineral stock west of New York.

THE WESTERN MINERAL EXCHANGE

320 MADISON STREET

SEATTLE 4, WASH.

KIND TO YOUR RARE GEMS Norton 400-Grit Grinding Wheels

I had these especially made up for you because my own experiments have proved their value beyond every doubt. Tiger-eye, natrolite, thomsonite, and chlorastrolite and other fibrous gems positively will not splinter under the gentle touch of this Norton 400-grit wheel. Malachite, chrysocolla, turquoise, etc. do not tend to undercut on the soft spots. Fire opals and other fragile gems are much safer with this gentle 400-grit wheel. Cuts fast! Cuts smooth! In 3 popular sizes.

NORTON 400-GRIT GRINDING WHEELS

6" x 1" @\$4.00 8" x 1" @\$6.00 10" x 11/2" @11.15

STANDARD NORTON GRINDING WHEELS

Grit	6x1/2	6x1	8x1	10x1	10x1½	12x1	12x11/2
100	\$2.40	\$2.75	\$4.10	\$5.75	\$8.05	\$7.75	\$11.00
220	\$2.60	\$2.95	\$4.45	\$6.10	\$8.60	\$8.30	\$11.95
Shipping							
Weight	2 lbs.	3 lbs.	5 lbs.	7 lbs.	9 lbs.	9 lbs.	14 lbs.

Please add postage. State arbor size.

BEHR-MANNING SANDING CLOTH

In 120, 220, 320 grit for disc and drum type sanders.

	Per Foot	Feet Per \$1	Full 150 Ft. Roll	Wt. Full Roll
2"	6c	20	\$ 5.70	3 lbs.
3"	8c	15	8.25	5 lbs.
8"	20c	6	20.80	12 lbs.
10"	26c	5	26.40	15 lbs.
12"	300	4	31.80	20 lbs

IMPORTANT NOTICE. We can no longer pay postage on grinding wheels or sanding cloth because of OPA authorized price increases which we are now paying on supplies in stock.

"Art of Gem Cutting". \$1.50 postpaid. "Revised Lapidary Handbook". \$3.00 postpaid.

LEVIGATED ALUMINA. For polishing. \$1.00 lb. 3 lb. for \$2.50 postpaid.

Mineralights, Gilde Gem Cutters, Variable Speed Transmissions,

No more catologs. We will have one even bigger and better after the new year if equipment prices have steadied by then.

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28 VIVIAN STREET

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COLORADO CARNELIAN AGATE

We have had outstanding response from our last and original Ad concerning the recent new find of Colorado Carnelian Agate.

Orders have been received from hundreds throughout the entire Nation, from Maine, Oregon, Florida, practically every State. In every case, the agate got the highest praise for its beauty and value.

Old man Winter has now settled on its site. We did get enough out before this happened to last a while. For all retail orders, we saw the pieces so that we are absolutely certain of its beauty, quality, and texture. When bulk is shipped, and the customer saws a piece that is not quality, send it back to us and we will replace it. We don't exaggerate when we claim it to be the finest agate ever found. Every stone a \$10.00 gem at least. A big range of colors, ranging from deep dark red to light tint, some blending with a rich yellow. No two slices—no two pieces—alike. \$4.00 per lb, and guaranteed. Eastern Customers send to

PAN-AMERICAN MINING CO.

BOX 146

BAYFIELD, COLORADO

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CHRISTMAS SPECIALS

Australian Opal, rough\$6.00 per	our	nce
Mexican Turquoise, rough (good)\$8.50	per	lb.
Arizona Turquoise, (fine quality)\$20.00	per	lb.
Clear Quartz (Nevada) excellent facet material\$1.00	per	lb.
Petrified wood (Arizona) gem quality\$2.00	per	lb.
Abalone Shells (about 5 x 6 inches) fine cutting material 15c each (Shipping weight about 2 lbs, each.)		
NOTE: 16 and for read and 200/ Federal Toy Diseas include posters		

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Cut Gem Stones Mineral Sets Lapidary Equipment Rough Materials Diamond Tools Gem Books

P. O. BOX 446

MONTROSE, CALIFORNIA

GREETINGS

We take this method to wish all our friends, both personal and business, a very Merry Christmas and a Happy and Prosperous New Year.

We have greatly appreciated the business you have given us since we started

We have greatly appreciated the business you have given us since we started this business a few months ago, but our greatest pleasure has been derived from the many letters we have received, expressing appreciation for materials received from us, and for small services we have been able to render at various times. These letters have been a constant source of inspiration.

May we continue to have your support during the coming year. Your orders, and inquiries, will continue to have our best attention, whatever your needs may

MINERAL and GEM DEALERS

P.O. BOX 912

ASHEVILLE, N. C.

Back Numbers of Rocks and Minerals

Sept. 1931—5th Anniversary Number— 50c

Dec. 1931—The preparation of micromounts, by Dr. L. C. Wills, pp. 149-171 50c

Rocks and Minerals

Peekskill, N. Y.

Tri-State District Minerals

I have a large stock of Tri-State district minerals for sale at retail and wholesale prices. Also a large stock of fluorescent minerals and fine fluorite specimens.

J. A. ROBERTSON

AUSTRALIAN OPALS

Rough Opal. We much regret to announce that supplies of Rough Cutting Opal are practically exhausted. Orders for rough cutting Opal or for rough Opal Specimens should not exceed \$10.00 at present.

BOX 105 BAXTER SPRINGS, KANSAS

PRIDAY RANCH THUNDER EGGS

50c per pound.

Tiger Eye, yellow 35c per square inch.

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2701 Alum Rock Avenue San Jose 12, California Solid "Faced" Black Opal. Small selections of Green, Blue, Red-green colors are occasionally available at prices ranging from \$2.00 per carat weight up to \$10.00 or Our Opal leaflet No. 48 free on request \$20.00 per carat weight and upwards. Natural history books thousands). Lists

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RARE GEM AGATE: Assortments include our finest scenic and mossy Jasper-Agate in brilliant reds, orange, and golden yellows; varicolored gem moss agate; exquisite flowered and the beautiful carnelian plume agate. Cabochon only—\$5.50 lb. Postoaid.

EXCELLENT JASPER-AGATE: Assorted, highly colored jasper-agate and unusual pictured jaspers in vivid colorings. Cabochon only. **\$2.50** lb., 5 lbs. **\$11.25** and 10 lbs.—**\$20.00** Postpaid.

BARGAIN LOTS: Assorted Jaspers, jasper-agate, mixed gem agate and beautifully colored novaculite. Excellent for amateurs, schools, and lapidary societies. 1 lb.—\$1.00; 5 lbs.—\$4.25; 10 lbs.—\$7.50 Postpaid. 25 lb. lots—\$12.50; 50 lbs.—\$17.50 and 100 lbs.—\$25.00 F.O.B. Alpine.

FRANK DUNCAN and DAUGHTER

BOX 63

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EXCELLENT SPECIMENS

FROM LOS LAMENTOS, MEX. AND VICINITY

- FINELY FORMED VANADINITE CRYSTALS on lovely Descloizite crystal groups. These specimens are rare, beautiful and wonderfully crystallized.
- 2 x 3"—\$2.50; 3 x 4"—\$5.00; 4 x 5"—\$7.50.

 ROSETTES OF DESCLOIZITES. Crystals completely cover matrix. These specimens are very fine. 2 x 3"—\$2.00; 3 x 4"—\$3.50; 4 x 5"—\$5.00; 5 x 7"— \$7.50
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 APATITE XLS. Good terminations. 4 for \$1.00.

 DOUBLE TERMINATED QUARTZ CRYSTALS. These are similar to the Herkimer
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 1/4" long 3 for \$1.00—1/2" long 2 for \$1.00.

 ANGLESITE ON SULPHUR. One of the rare occurrences in which anglesite is found crystallized. 2 x 3"—\$1.50; 3 x 4"—\$2.00.

 ADAMITE—MAPIMI, DURANGO. Zinc—Arsenate. A very rare and beautiful mineral. Highly Fluorescent. 2" x 2"—\$2.00, 2 x 3"—\$5.00, 3 x 4"—\$2.00. \$7.50.

ALL PRICES PREPAID

THE WIENER MINERAL CO.

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TUCSON, ARIZONA

MICA SPECIMENS

Start a collection of one of the most interesting varieties of minerals, or add to your present collection. We offer the following:

Cleavages, small or large, of ordinary Biotite, Green Chlorite, Vermiculite, Ruby or green Muscovite. Also pink Chlorite, but this is available only in small cleavages of 3/4 to 1 inch.

Following inclusions in Muscovite Mica:

Flattened, and transparent, garnet; Radiating crystals of thulite, zoisite, and epidote; Radiating crystals of tourmakine; Thin, flat plates of quartz and feldspar; Malachite; Biotite intergrown, or interlaminated, with muscovite; Phantom crystals of other minerals in muscovite; Crystal growth phantoms; Reticulated magnetite, etc.

These specimens are priced from 10c to \$1.00, according to size and quality. Due to the great difference in specimens it is impossible to describe and price each one here. You cannot lose. Send us what you want to spend, and if you are not satisfield send the material back, and we return your money without question.

Above specimens are from North Carolina, South Dakota, and Georgia. We also have ground mica of all kinds and meshes, fabricated cut mica, foreign mica, sericite, etc. Can furnish assortment in sets at special prices, also better specimens for the advanced collector at higher prices. These specimens are all rare and we cannot replace our stock under present conditions. Order at once.

MINERAL AND GEM DEALERS

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Agates very well cut and polished. Moss, carnelian, Montana, etc.

Snowflake obsidian, Utah.

Ring stones—\$10.00 per doz. Cabochon, medium brooch and pendant—\$18.00 per doz. Cabochons, large brooch and heart-shape-\$24.00 per doz.

Men's rings, heavy cast sterling silver, hand finished, set with Montana agates

Write for prices on large orders of agates. Money
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Pendants, Sterling Silver bezel without chains, \$30.00 per doz. Brooches, Sterling Silver bezel, safety catches, \$35.00 per doz. Ladies Rings, Sterling Silver. \$35.00 per doz.

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Well agatized petrified wood from the noted Sweet Home, Oregon area. Takes excellent polish. Mostly gem quality. 2 lbs. \$1.00. Postage extra.

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Amateurs or professionals . . . hobbyists or jewelers . . . ALL will find new enjoyment in this different Gem Maker. All necessary lapidary equipment is farnished, including a super-charged diamond blade for sawing, and all wheels for grinding, shaping and polishing. The complete equipment as shown, less motor and belt, for ONLY \$29.50, F.O.B. Burlington, Wis. No priority needed. Write today for information and literature on the Gem Maker. Prices on other lapidary supplies upon request.







Only slight pressure on the saw arm and a few seconds time are required for the diamond blade to make a complete cut.



Here the gem, attached to the dop stick, is being shaped into a beautiful cabochen.



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- Swap or Sell. Many interesting species from New England and other parts of the U. S. Thumb nail to large size specimens. Tell me what you have to trade when you write for list. N. W. Wall, 10 High St. Boston, Mass.
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- Missouri Minerals in exchange for mineral specimens from other localities. Send list. Albert L. Kidwell, 19 Great Oaks, Rolla, Missouri.
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- BLACKHAWK INDIAN BRACLETS: Copper or stainless steel, one inch wide, attractive Indian designs, thousands sold this year, \$1.00 postpaid, Also wholesale. Blackhawk Trading Post, Black Hawk, Colo.
- Earrings—10 carat base—14 carat crown—Tiffany set—syn. sapphire—ruby—blue spinel—\$18.50 and \$20.00. Beautiful natural Topaz—step cut stones about 15 carat—\$1.50 carat, Madeira Topaz—rare dark shade—about one carat brilliants—\$2.00 carat. Sterling rings—\$2.00—\$3.00—\$4.00 nice agate and similar stones. Sterling rings—18 by 13 mm onyx in marcasite circle—\$10.00. Slabbed stock—mixtures only—a prime gift for the cutter—\$3.25. Jewelry making kits—silver and stones ready to use—\$5.00 and \$10.00. Many other stones and set pieces. We send on approval. C. F. Miller, Naamans Creek Road and Worth Avenue, R.F.D. Boothwyn, Pa.
- dollar cleverly mounted in stainless steel makes attractive unique bracelet. Satisfaction or money refunded. Also wholesale. Blackhawk Trading Post, Black Hawk, Colo.
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JEWELRY

- Wanted: Watches and jewelry—any condition—highest priecs paid—cash mailed immediately after acceptance of our offer. ABLER'S, 2707 Wyoming St., St. Louis 18, Missouri.
- For sale to dealers. Fine Indian handmade jewelry set with either petrifed wood or turquoise. Wholesale only. Write or order. William E. Lynch, 110 E. Mesa Ave., Gallup, New Mexico.
- Send me your favorite cabochon to be mounted in hand-made rings, brooches, and pendants. Ladies silver rings, \$3.00 to \$4.00; 10K gold, \$7.50 and up depending on weight. Men's silver rings, \$4.00 to \$7.50; 10K gold, \$10.00 to \$12.50. Beautiful engraved silver bracelets, one gem mounted, \$12.50. Prompt service. Correspondence invited. Money refunded if not satisfied. K. K. Brown, Beaver, Utah.
- cabochons, Bracelet sets, drilled Hearts and Pendants, with Sterling clevices attached. Sterling chain as available. Reasonable deposit brings approval selection. School inquiries invited. M. L. Davis, Rt. 2, Carroll, Ohio
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I Will Pay Highest Prices for meteorites, iron or stone, or any specimen of native (metallic) iron whether believed to be meteoric or not. S. H. Perry, Adrian, Mich.

MINERALS

- Why waste your time, money and equipment cutting inferior material when you can get superb gem quality material from us to cut into beautiful cabochons and slabs? The Rock Market, Route No. 1, Box 225, Eagle Point, Oregon.
- Emerald rough from Colombia, S. A. Crystals for cabochons 50c to \$3.00 each, also for cutting faceted stones \$25 to \$140 per carat. Selection on approval. Robert F. Bickford, Norway, Maine.
- 40 minerals and fossils \$1.25. 100 fossils \$2.00. 25 minerals, some fluoresce, \$1.25. Postpaid. All wholesale. Bryant's Rocks, R2, Lawrenceburg, Ky.

MINERALS

- FLUOR SPAR CLEAVAGE OCTAHEDRONS:
 Very attractive and many fluorescent.
 Half dozen ½" to 1" for only \$1.60
 postpaid. One dozen specially selected
 ½" to 1½" tip to tip \$3.50 postpaid.
 A few larger specimens, prices on request. H. Stillwell & Son, Rockville Centre, N. Y.
- SMITH'S BARGAIN AGATES—12 assorted polished agate ring sets \$2.00 postpaid. These are from a collection we have accumulated in our store and we have too many. Money refunded if not satisfied. Smith's Agate Shop, 228 S, W. Alder Street, Portland 4, Oregon.
- CABOCHON MATERIAL. 30 Mexican opals, 100 small turquoise, 50 agate pieces, 10 sawed agate slabs, 12 different polished cabochons. \$1.50 each lot. Polished fluorescent agatized fossil coral specimens on approval. Dr. Ralph Mueller, Professional Bldg., Kansas City 6, Missouri.
- WYOMING GEM MATERIAL—Eden Valley Wood, Our Specialty. Agatized, beautiful designs, ½ inch limb to 150 lb, museum specimen. Limbs polished on one end 50 cents and up. Silicious oolite, well agatized, beautifully colored. Turritella agate, light colored shells in dark matrix. Algae-agate, light whorls in dark brown matrix. Hematite jasper, alternating bands of hematite and colorful jasper. Wyoming black wood, jet black. The above is select, and polishes well. A generous slice \$1.00 each, all six \$5.00, over 24 sq. inches. Our get acquainted offer. A select sweetwater agate; free with each \$3.00 or make it \$5.00 and receive this agate plus a beautiful banded Wyoming agate. Offer expires January 1, 1947. Novel paper weight. Pollshed Eden Valley limb surrounded by several colorful Wyoming minerals. Makes fine gift. \$1.50 and \$2.00. 10 pounds rough, assorted Wyoming cutting material, \$6.25. We pay all postage in U. S. Other fine Wyoming minerals. Money back guarantee. Birch Gem Shop, Box 75, Atlantic City, Wyo.
- A NEW SERVICE TO DEALERS—You furnish the polished stones; our expert Indian Silversmiths will mount them in genuine hand-made Sterling Silver jewelry individually created for your trade to your specifications. Prices reasonable. Bonded member United Indian Traders Association, TURQUOISE POST, R.R. 2 Box 268, Santa Fe, New Mexico.

- Scott Rose Quartx Co.—Rose Quartz and Black Hills specimens of all kinds and colors; for rock gardens, cabinets, etc. Boxes: 24 specimens, \$1.00; 18 specimens 75c; 15 specimens 50c. Postage paid. Box 472, Custer, S. Dakota. Send stamp for price list.
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INDEX TO ADVERTISERS

Albanese, John S	Lowe, B906
Alessi, A. J	Martin, E. W 906
Art's Gem Shop894	Martin's Mineral Mart
Aztec Gem Shop898	Meier, Ernest
B & I Manufacturing Co	Meier, Ernest
Bateman, E. S	Mineral and Gem dealers
Bas State Abrasive Co. 975	Mineral Foundation
Bensusan, Kilian E	Multicraft Shop898
Diack Flawk Trading Post	National Amateur Mineralogist930
Branham, Allan	Neuwerk Lapidary Shop
Branson, O. T	Nonneman, Mrs. B. F900
Burminco914	Pan-American Mining Co
Clarke, J. B	Parmenter, Forrest L
Classified Ads	Powell Co., H. E
Colorado Gem Co	Prehéim, Chas
Davey, George T	Reamer, Louis
Davey, George T. 882 Day, Lionel 897	Robertson, J. A
Demrick, Lloyd M	Robinson, J. R
Desert Rat's Nest	Robinson, J. R. 907 Rock Pile, The 928 Rocks and Minerals 876, 877, 879
Elliott Gem Shop930	Rocks and Minerals 876, 877, 879 Rocks and Minerals 907, 908, 913, 919
Felker Mfg. Co	RX Laboratory
Fischer, Mrs. Richard896	Sanger, Arthur and Lucille878, 898
Ford, Hugh A	Schoen, Ted
Freeman, E. B	Schortmann's Minerals 3rd Cover
	Seward, Norman
Geminlap Mart	Shumaker, E. H878
Gunnell, E. Mitchell905	Shumaker Products Co899
Hermitage Lapidary Products902	Smith's Agate Shop882, 911
Hermosa Gem & Mineral Shop 881	Smith, O. C894
Hiawatha Rock & Mineral Shop	Sussbach, Herbert895
Hill, Chas. E	Taylor, R. L911
Hill, V. D	Thomas, Charles A876
Howard I Harry	Thompson's Studio
Hurlbut, Stewart W	Thunderbird Gem Shop
Hill, Chas. E. 891 Hill, V. D. 906, 931 Holliday, C. A. 892 Howard, J. Harry 900 Hurlbut, Stewart W. 882 Hyatt Lapidary Equip. Co. 886, 887	Timm, C. A
James John L	Toupal Brothers
Jarvis, A. L	Trescartes, Vincent
Jewelcraft, J. J	
Kasey, Mrs. MaryAnn884	Ultra Violet Products, Inc
Keithley Bros927	Universal Minerals910
Keweenaw Agate Shop917	Ward's Nat. Science Est., Inc Back Cover
Knowlton Minerals906	Weeks, C. A881
Lankford, J. B883	Western Mineral Exchange 888, 893, 912, 916
Lapidary Equipment Co936	Western Trader889
Lay-Art Gem Shop913	Wiener Mineral Co
Lee, O. Ivan921	World's Minerals894
Lewis, W. Scott913	Wyoming Jade Co
Lodewick, J. Elton	Wyming Minerals928
Long Beach Min. Lap. Supply Co 882	Yaquina Gem Shop881

LS

)7)7 er 9,

er

GENERAL INDEX OF AUTHORS AND CONTENTS Volume 21-1946

					Leading	articles	are	in	bold	face	type
Agates	from	B.	d.	Mapimi,	Mexico				Cinc	innati	Min.

	e in bold face type
Agates from B. d. Mapimi, Mexico	Cincinnati Min. Soc
(Estlack)	Colorado Min. Soc. 25, 90, 156, 214, 290,
In South Africa	Coloredo Serios Mis 508, 765, 865
Oueensland (Australia)	Columbian Geological Society 360
In South Africa 27 Two fields in New Mexico (Neely) 239 Queensland (Australia) 355 Jeffers field, New Mexico (Neely) 430 Early reference (New Jersey) 655 Beautiful agate in Colorado 669 Alaka: Ekimo etal (Westey) 244	Conn. Valley Mineral Society359, 865
Early reference (New Jersey)655	East Bay Min. Soc. 25, 90, 152, 215, 292,
Alaska: Eskimo stone craft (Waskey) '24	Columbian Geological Society
Nickel occurrence in	Gem Village Rock Show 678 763
Memories of Nelson Island (Waskey) 350	Georgia Mineral Society359
Beautiful agate in Colorado 669	Imperial Lapidary Guild90, 436
Alperia: Collecting overseas (King) 418	Junior Mineral Exchange
Allanite first found in Greenland207	360 508 587 679 766 868
Allante first found in Greenland 20/ Amethys, Bullfrog Mine, Nev. (Lisle) 200 Aragonite & onyx, Fairfield, Calif. (Lisle) 659 Arizona, Turquoise in 80 Chalcedony nr. Aguila (Treloar) 143 Libethenite in 421 Polybasite, Silver King Mine 431 Coronadite first found in 497 Arizonite found only in 5055	Gem Stone Collectors
Aragonite & onyx, Fairfield, Calif. (Lisle)659	765
Chalcedony nr. Aquila (Treloar)143	Maine Min. G Geol. Soc. 26, 91, 153, 290,
Libethenite in421	Marquette Geol. Asso. 26, 91, 154, 214,
Polybasite, Silver King Mine431	290 361, 435, 679, 766
Arizonite found only in	Min. Club, Hartford91, 289, 435, 766
Turquoise in America's history670	Min. 30c. of Anzona 23, 91, 132, 214, 300,
Arizonite found only in Arizona505	Min. Soc. Dist. of Columbia 25, 92, 156,
Coronadite first found in 49/ Arizonite found only in 505 Turquoise in America's history 670 Arizonite found only in Arizona 505 Arkanasa stone or Novaculite (Scully) 424 Australia, Mudgee diamond occurrence 213 Charcon	Los Angeles Min. Soc. 361, 436, 586, 678,
Chrysoprase in Oueensland	Min. Soc. So. Calif. 26, 91, 153, 214, 290,
Agate in Queensland355	Min. Soc. So. Nevada 152, 215, 288, 766
Chrysoprase in Queensland 353	Min. Soc. Utah
Rutilated quartz occurrence	Min. Soc. (London)
Rahama Jalanda: West Indias Tain (Brown) 282	Minnesota Min. Club 217, 287, 433, 679
Barbados: West Indies Trip (Brown)202	Monterey bay Min. 30c. 20, 132, 213, 207, 132, 213, 207, 132, 213, 207, 132, 213, 213, 213, 213, 213, 213, 213
Barite, Buckshot Mine, Mo. (Kidwell)578	National Federation Min. Soc738
Texas Co., Mo. (Kidwell)849	Nebraska Min. & Gem Club .26, 216, 437
Badlands of Mexico 575	116Wark Min. 30c. 23, 90, 130, 214, 286,
Baxter, William T	New Jersey Min. Soc. 25. 90, 152, 218, 288,
Berman Laboratory, Formal Opening of846	
Biblio Notes 292 363 554 691	10 10 10 10 10 10 10 10 10 10 10 10 10 1
Autunite at Mauch Chunk, Penn. 761 Bahama Islands: West Indies Trip (Brown) 282 Barbados: West Indies Trip (Brown) 283 Barite, Buckshof Mine, Mo. (Kidwell) 578 Texas Co., Mo. (Kidwell) 849 Basalt caves of Gembudo, Japan 147 Badlands of Mexico 575 Baxter, William T. 357 Berman Laboratory, Formal Opening of 848 Bermuda: West Indies Trip (Brown) 283 Biblio. Notes 292, 363, 554, 681 Blank, E. W. 482 Blow pipe you don't have to blow (Pfeifer 87 Brazil, Uranium deposits in 17 Diamonds (Thomas 422 British Guiana, Diamonds in 281 Diamonds (Thomas 422 Brown, Samuel C. 85, 282, 499 Celcite, A mountain of in Calif. 769	No. California Min. Soc. 91, 214, 289, 359,
Blow pipe you don't have to blow (Pfeifer 87	
Diamonds (Thomas 422	435, 676, 766
British Guiana, Diamonds in281	No. Ohio Guild 92, 154, 292, 360, 678, 766
Diamonds (Thomas	No. Federation Min. So676
brown, Samuel C	Pacific Min. Soc. 25, 91, 152, 216, 288.
Calcite, A mountain of in Calif	
1945 mineral production 136 850	Pasadena Jr. College
Death Valley Onyx (Lisle)203	Ougens Min Soc 25 90 214 288 362
Pet. Wood, Calistoga (Lisle)502	508, 765
Aragonite fr oncy Fairfield (Listo) 650	Rochester Acad, Sci. (Min. Sec.) 25, 91,
Mountain of calcite in	Pocky Mt Convention 66 288
Valley Well is California's deepest870	Southwest Mineralogists
Uranium minerals (Stewart) 138	Springfield Min. Soc
New pitchblende deposits found in 207	State Min. Soc. of Texas
Timmins takes care of miners410	Wellesley Min. Club
Hitch-hiking trip (Dahlberg) 759	Western Lap. & Jewelry Soc217
Mt. Sharat, Baffin Island	Wisconsin Geol., Soc. 92, 154, 214, 290,
Chalcodonic West Indies Trip (Brown)282	Worcester Min. Club 217, 289, 586, 866
Chile: dolomite deposits 74	Yavapai Gem & Min. Soc. 27, 92, 156, 214,
Chips from the quarry 2, 66, 130, 194, 266	Coal (Cannel) in Kentucky 674
338, 410, 482, 554, 646, 738, 838	Colombia: West Indies Trip (Brown)282
Chrysoprase first found in Germany	Colorado, Beautiful agate disc. in669
in Queensland, Australia	Augite found in (Ellermeier)756
Clinochlore, Brinton Quarries, Penn 22	Concretions, Rufus, Wisc. (Knowlton)
California Federation Commen	Connecticut, Spodumene cabochons (Thomas) 433
Boston Mineral Club 25 90 156 214	Mianus Gorge (Brown)499
290, 361, 435, 507, 678, 765, 865	Ecton Mine, Penn. (Thomas)
Central Iowa Min. Club218, 289, 359	Bare Hills, Mine, Md. (Zodac)144
Chicago Rocks & Min. Soc. 218, 361, 437	Flemington, N. J., Mine (Zodac)346
Diamonds (Thomas 12 Calciter 12 Calciter 13 Calciter 14 Calciter 14 Calciter 15 Calciter 15 Calciter 16 California, Mesa Grande tourmaline (Everitt 18 California, Mesa Grande (Everitt 19 Calciter 19 Ca	Min. Soc. So. Calif. 26, 91, 153, 214, 290, 361, 435, 678, 866 Min. Soc. So. Nevada 152, 215, 288, 766 Min. Soc. Utah 290 Min. Soc. Utah 290 Min. Soc. (London) 289, 508 Minnesota Min. Club 217, 287, 435, 679 Monterey Bay Min. Soc. 26, 152, 218, 289, 434, 507, 587, 679 National Federation Min. Soc. 36, 214, 288, 289, 289, 289, 289, 289, 289, 289

R

LIL LIM M MAM

M

ZZZZZZZZZZZZZZ

Native copper in Tennessee	Geysers first found in Iceland 84
Ashio, Japan, copper mine 580	Gold boom, Canada's new 80
Liberty Mine, Md. (Miller)	Hang on to your specimens (Goudey)146
Coronadite first found in Arizona497	Major strike in South Africa273
Corundum in New Jersey	Mines of Mt. Agucate, Costa Rica (Rex) 561
Costa Rica, A rockhound in (Rex) 15	Wrentham mine, Mass. (Dixon)754
Native copper in Tennessee 575 Ashlo, Japan, copper mine 580 Liberty Mine, Md. (Miller) 665 Coronadite first found in Arizona 497 Costa Rica, A rockhound in (Rex) 15 Gold mines, Mt. Aguacate (Rex) 561 Cross, John L. 670 Cuba: West Indies Trip (Brown) 282 Curtis, C. C. 675	Geysers first found in Iceland 84 Gold boom, Canada's new 80 Hang on to your specimens (Goudey) 146 Major strike in South Africa 273 Mines of Mt. Agucate, Costa Rica (Rex) 561 Wrentham mine, Mass. (Dixon) 754 Gold Coast: Diamonds (Thomas) 423 Goudey, Hatfield 146
Cross, John L	Goudey, Harrield146
Cuba: West Indies Trip (Brown)282	Graphite mine, Chester Co., Pa. (Thomas)415
curris, C. C675	Greece, Laurium locality
Dahlhara Kaith B	Goudey, Hatfield Co., Pa. (Thomas) 423 Goudey, Hatfield Co., Pa. (Thomas) 415 Greece, Laurium locality
Danner Tod	Focuserite first found in
Darrington Charles	Fegusonite first found in
Dealer Triais & tribulations (Albanese) 70	Greenlandite from
Dealers, with our 28 93 155 219 291 262	Hamilton Haward V
437 509 588 680 767 969	Hamilton, Howard V
Dahlberg, Keith R	Hamilton, Howard V
Demrick, Lloyd M	Hematite vie Perkiomen mine (Thomas) 100
Diamonds: Jagersfontein Mines, So. Africa 130	Wheatley mine (Thomas) 211 In wrong place (Morgan) 563 Hilgardite first found in Louisiana 349 Hole, Valley Well is California's deepest 870 Howard, J. H. 23
Premier Mine, So. Africa	In wrong place (Morgan) 563
Mudgee, Australia, occurrence213	Hilpardite first found in Louisiana 349
In British Guiana	Hole Valley Well is California's deepest 870
Could be inexpensive-but! Thomas)422	Howard I H
Dixon, A, M,	noward, 2: the property of the contract of the
Dolomite: Chilian deposits 74	Iceland, Geysers first found in
In British Guiana ceurrence 13 In British Guiana 281 Could be inexpensive-but! Thomas) 422 Dixon, A, M, 754 Dolomite: Chilian deposits 74 Dubiaga, Michael 747 Dufrenite in New Jersey 199	Surtshellir Cave
Dufrenite in New Jersey199	Illinois, Cherry Valley (5mith)
Egypt, Natron Lakes of	Iceland, Geysers first found in
Egypt, Natron Lakes of	India, Mineral collecting in (Gaines)483
Collecting in Middle East (Gaines)210	Italy, Solfatara visited (Thurston)
Eisenberg, Jerome M	Collecting overseas (King)420
Ellermeier, Guy B	Ives, Ronald L. 10, 07, 149, 195, 207, 539, 411,
Epidote find in Colorado (Ellermeier)872	
Entrea: Collecting in Middle East (Gaines) .208	Jade, New discovery in Wyoming (Branham) 838
	Jamaica: West Indies trip (Brown)282
Estiack, J. C	Japan: A sailor on Okinawa
Endishes first found in Guernland	Basalt caves of Gembudo
Euchart H A 570	World's finest stibnites from510
Estlack, J. C. 12 Ethiopia: Collecting in Middle East (Gaines) 208 Eudialyte first found in Greenland 84 Everhart, H. A. 570 Everitt, Albert 88	Jade, New discovery in Wyoming (Branham) 838 Jamaica: West Indies trip (Brown) 282 Japan: A sailor on Okinawa 27 Basait caves of Gembudo 147 World's finest stibnites from 510 Besshi copper mine 568 Ashio copper mine 580 Osore-xan 655 Maze chief zeolite locality 746
Event, Albert	Ashio copper mine
Fergusonite first found in Greenland 363	Osore-xan
Field operations of Alt. Cur. Equipt. (Ives) 16	Maze, chief zeolite locality746
Fergusonite first found in Greenland	Osore-ran 655Maze, chief zeolite locality746 Jeffersonite first found in N. J. 85
Fluorescence: Field operation A. C. Egpt.	Kentucky, Coral limestone near Louisville 493
(Ives) 16	Cannel coal in
Kibblehouse quarry, Pa. (Thomas) 83	Kessler, Charles N
Shales near Pottstown, Pa. (Thomas)273	Kidwell, Albert L500, 578, 666, 750, 849
Great ball of fire (Thomas)292	Kindle, Cecil H
Portable Fluo. lamp (Lisle)345	King, C. Henry418
New occurrence in New Jersey (Hayes) .349	Knowlton, Fred G, 491
Fluorescent Floosie (Tommy)569	Lansfordite from Penn. (Zodac)146
Furnace products (Thomas)574	Lapidary Department:
Fluo. deweylite (Tomilison)	"Me and Pa"-two old rockhounds 18, 86, 150,
Ford (Hugh A.) opens mineral store 194	211, 286, 358, 427, 503
Foster Mark M 427	Cutting miniatures (Sanger)
For lay T	Bracelets without bezels (Sanger)170
France: Collecting overseas (King)419	Bracelets without besets Pt. 2 (Sanger)
Franz. Harvey	Bracelets without bevels Pt. 4 (Sanger) . 356
Frondel, Clifford	Large wheel carving (Sanger) 432
Fluorescence: Field operation A. C. Eqpt. (Ives) (Iv	Design for a brooch (Sanger)
In Michigan (Franz)	Double cahochon bangle (Sanger)584
Calman Bighard V 209 493	Scalloned hexel (Sanger)
Gaines, Richard V	Isn't that a daisy? (Sanger)
Game of Maine (Wallace) 571	Bead drilling (Howard
Goods placers (Italy (Ives) 411	Sanding disks (Baxter)357
Goology: Glacial lakes Sh'ounk Mts. N. Y.	Interesting Conn. stone (Thomas)433
(Myers)	Problem solved—sphere (Thomas)300
Little Cottonwood area, Utah (Ives) 67	Diamond saw abuse (Thomas)
Whirlwind Valley, Utah (Ives)195	Lapidary Department: "Me and Pa"-two old rockhounds 18, 86, 150,
Stansbury Island, Utah (Ives)267	Gadgets and ruts (Demrick)673
Terminal moraine, N. Y. C. (Kindle) 272	Electric soldering iron (Curtis)675
Granite Peak area, Utah (Ives)339	Amazing speed claimed for Hillquist
Post-glacial lakes, Susq. Val. (Young) 494	hole saw and gem drill
Fish Springs area, Utah (Ives)555	Lead mines in Missouri, World's largest211
Moroni's Postpile, Utah, (Ives)739	Postosi mine of Mexico
Solnhofen Jurassic deposits (Dubiaga)747	Gadgets and ruts (Demrick) 673 Electric soldering iron (Curtis) 675 Amazing speed claimed for Hillquist hole saw and gem drill Lead mines in Missouri, World's largest 277 Postosi mine of Mexico 573 Fredericktown, Mo., dist. (Kidwctl) 750 Levey, Harold 274 Levine, Robert Alan 426 Libethenite in Arizona 421 Libethenite in Arizona 421
Geology of Long Island (Fox)851	Levey, Harold
Georgia, Reed iron mine281	Levine, Robert Alan
Brewer mine	Libernenire in Arizona
Germany, Chrysoprase first found in213	Limestone: McAree, N. J. quarry (Louis)
Weinschenkite from Bavaria275	Window Quarry, N. J. (Zodac)
lifeld manganese occurrence489	Atten Onemy N 1 (Todae)
Gaines, Richard V. 208, 483 Garnets, Green, Uvarovites (Trainer) 652 Gems of Maine (Wallace) 571 Geode placers, Utah, (Ives) 411 Geology: Glacial lakes, Sh'gunk Mts. N. Y. (Myers) 67 Whiriwind Valley, Utah (Ives) 67 Whiriwind Valley, Utah (Ives) 195 Stansbury Island, Utah (Ives) 267 Terminal moraine, N. Y. C. (Kindle) 272 Granite Peak area, Utah (Ives) 339 Post-glacial lakes, Susq. Val. (Young) 494 Fish Springs area, Utah (Ives) 739 Solnhofen Jurassic deposits (Dubiaga) 747 Geology of Long Island (Fox) 851 Georgia, Reed iron mine 281 Brewer mine 281 Germany, Chrysoprase first found in 213 Weinschenkite from Bavaria 275 Ilfeld manganese occurrence 489 Ems noted for pyromorphite Selmanery 747 Selmaners (Application 1987)	Levey, Harold Levine, Robert Alan Libethenite in Arizona Limestone: McAfee, N. J. quarry (Zodae) 416 Sheldon Quarry, N. J. (Zodae) 492 Windsor Quarry, N. J., (Zodae) 576 Atlas Quarry, N. J., (Zodae) 556 Franklin Quarry, N. J., (Zodae) 750
Somboten Investic denosity (Dubiana) 747	Franklin Quarry, Pt. J., Lavuet,

near Louisville, Ky. 493 from Milton, Penn. 746 Solnhofen, Bavaria (Dublaga) 747 Limonite after wood, Louisiana 347 Pseudos in Pennsylvania 421 Lisle, T. Orchard	Geology of Long Island (Fox)
from Milton, Penn	Nickel occurrence in Alaska211
Solnhofen, Bavaria (Dubiaga)747	North Carolina, Crouse Mine (Ervin)357
Limonite after wood, Louisiana347	Novaculite, or Arkansas Stone (Scully)424
Pseudos in Pennsylvania421	
Lisle, T. Orchard200, 345, 502, 659	Obituary Notices:
Louisiana, Limonite after wood347	Harry Y. Drake (Wintringham) 27
Hillgardite first found in	Leon B. Bailey (Tupper) 88
Luoma, wm. E	George E. Rendell 88
Luoma, Wm. E	Frederick W. Horton
Collecting activites (Sampter)743	Maj. Thomas A. Reiner (Zodac)151
Manganese, Crouse, mine, N. C. (Ervin)357	Mrs. Grace Morse338
Ilfeld, Germany, occurrence489	Lewis B. Pringle (Schockley) 338
Mann, Alexander141	Cpl. Clay H. Holmes (Zodac)720
Martinique: West Indies trip (Brown)283	Koly O. Cooper (Pfleging)
Maryland, bare HHIS copper mine (Zodac)144	Oliving St. John's Island (Gaines) 210
Visionite new consumers (Levey)217	Onel A study of (Miller)
Fluor deventite (Temlinean) 575	In Mayico discovered in 1835 417
Liberty copper mine (Miller) 665	Do you spread error? (Foster)
Massachusetts Rischery Mt (Fleenhore) 75	Oregon Agate Reach (Thurston) 867
Plainville localities (Divon) 754	Palache Charles 845
Mexico, Agates, B. di, Manimi (Estiack) 12	Paleontology: Whirlyind Val., Utah. (Ives) 195
Vanadinite first found in	Trilobite fossils, III, (Michael)438
Giant's Causeway of America 357	Fossil fish from New York
Opals discovered in 1835 417	Panama: West Indies trip (Brown)282
Turquoise in	Pascoite xls., Peru355
Potosi mine	Pennsylvania, Bigham & Bingham mines 13
Badlands of	Perkiomen copper mine
Michael, George, V438	Catasauqua rock crystals 18
Manganese, Crouse, mine, N. C. (Ervin) 357 Ilfeld, Germany, occurrence 489 Mann, Alexander 141 Martinique: West Indies trip (Brown) 283 Maryland, Bare Hills copper mine (Zodac) 144 Campbell quarry, Texas (Levey) 274 Vivianite, new occurrence 356 Fluor. deweylite (Tomlinson) 575 Liberty copper mine (Miller) 665 Massachusetts, Blueberry Mt. (Elsenberg) 75 Mexico, Agates, B. dl. Mapimi (Estlack) 12 Vanadinite first found in 89 Giant's Causeway of America 357 Opals discovered in 1835 417 Turquoise in 505 Potosi mine 573 Badlands of 575 Michael, George, V. 438 Michigan, Fulgurites in (Franz) 354 Drift or float copper (Knowlion) 491 Upper Peninsula trip (Everhart) 570 Collecting in No. Mich (Luoma) 664 Microscopic examination (Strimple) 658 Miller, Seima (276 Minerals: Extra specimens (Ives) 149	Brinton quarries clinochlore 22
Drift or float copper (Knowlton) 491	Jefferisite first found in
Upper Peninsula trip (Everhart)570	Now It's rocks! (Thomas)
Collecting in No. Mich. (Luoma)664	Foton mine Oaks (Thomas)
Microscopic examination (Strimple)658	Ecton mine, Oaks (Thomas)
Vernon I	Perkiamen mine vie (Thomas) 199
Minerale: Evere enaciment (lune) 140	Wheetley mine hemselite (Thomas) 211
Vernon 655 Minerals: Extra specimens (Ives) 149 Today, Yesterday, and Tomorrow (Levine) 426 Missouri, World's largest lead mines 277 Marble in 423	Shales near Pottstown (Thomas)273
	Red xis on sphalerite (Thomas279
Marble in	Silver by-product (Thomas)281
Silver Mines area (Kidwell) 500	Friedensville zinc mine (Thomas)348
Buckshot barite mine (Kidwell) 578	Graphite mine, Chester Co415
Alice zinc mine (Kidwell)	Fluor, furnace product (Thomas)574
Frederictown district (Kidwell)750	Lansfordite & nesquehonite (Zodac)146
Blue barite, Texas Co. (Kidwell)849	Trip to Delaware (Zodac280
Mitchell, Richard	Sandstone occurrence (Darrington)199
Molybdenite near Hamburg, N. J	Limonite pseudos421
Montana: Going West (Reiner)	Post-glacial lakes (Young)494
Morgan, Waller V	Zoisite in583
Myers Dichmond E	Vandergriff localities (Hamilton)600
Missouri, World's largest lead mines	Colitie limestone from Milton 746
Natron Lakes of Egypt145	Automite at Mauch Chunk 761
Nebraska, Bayard minerals (Mitchell) 29	Port Perceite vie
Neely, Lottle M	Petrified wand Calistona Calif (Liela) 502
Nesquebooite from Popp (Todas)429	Pfeifer William Ir
Nevada, Amethyst Rullfron Mine (Links) 200	Pfleging, Mrs. William
New Jersey: Multi-colored stone (Haves) 2	Philippines, Quartz pebbles from
New fluorescent occurrence (Haves) 349	Poem (My Oklahoma Desert Rose)-Slade845
Unusual find (Hayes)	Polybasite from Arizona431
Jeffersonite first found in 85	Porto Rico: West Indies trip (Brown)283
Molybdenite near Hamburg145	Prennite first found in South Africa 23
Silver in a copper mine	Pumice, a rock that floats
Euleurite In199	Puzzie for you 74
Trip to Delevers (Zodos)	Pyrovene: lefferenite in New Jorges
Fleminator conner mine (Tedas)	Augita in Fill Islands
McAfee Limestone guerry (Todae)	Augite in Coloredo (Ellernoles)
Sheldon Limestone quarry (Zodae)410	Reiner Mai Thomas A
Windsor Limestone quarry (Zodes) 576	Research, \$2,500,000 for post-war
Atlas Limestone querry (Zadas)	Rex. Robert
Franklin Limestone quarry (Zodes) 760	Robinson, C. H
Trenton once noted for minerals 501	Rock Crystal, Catasaugua, Penn
Prospect Park find	Herkimer Co. "diamonds"
Early reference for agate	Russia: Kola Peninsula minerals 85
Corundum in New Jersey	Rutilated quartz in Australia421
Museum, Brooklyn Children's exhibit 498, 564 Myers, Richmond E	Sampter, E. Lawrence743
Jeffers agate field (Neely)430	Harry Y. Drake (Wintringham) 27 Leon B. Bailey (Tupper) 88 George E. Rendell 88 Frederick W. Horton 99 Maj. Thomas A. Reiner (Zodac) 151 Mrs. Grace Morse 338 Lewis B. Pringle (Schockley) 338 Cpl. Clay H. Holmes (Zodac) 428 Roly O. Cooper (Pfleging) 757 Alfred J. Harstad (Kessler & Zodac) 759 Olivine: St. John's Island (Gaines) 210 Opal, A study of (Miller) 276 In Mexico discovered In 1835 417 Doy ou spread error? (Foster) 427 Oregon, Agate Beach (Thurston) 862 Palache, Charles 845 Paleontolegy: Whirlwind Val., Utah, (Ives) 195 Trilobite fossis, Ill. (Michael) 438 Fossil fish from New York 663 Panama: West Indies trip (Brown) 282 Pernsylvania, Bigham & Bingham mines 13 Perkiomen copper mine 17 Catasauqua rock crystals 18 Brinton quarries clinochlore 22 Jefferisite first found in 74 New It's rocks! (Thomas) 81 Kibblehouse quarry (Thomas) 81 Kibblehouse quarry (Thomas) 83 Ecton mine, Oaks (Thomas) 199 Wheatley mine hemaitle (Thomas) 211 Shales near Pottstown (Thomas) 273 Red xis on sphalerite (Thomas) 273 Red xis on sphalerite (Thomas) 273 Red xis on sphalerite (Thomas) 348 Graphite mine, Chester Co. 415 Fluor. furnace product (Thomas) 348 Graphite mine, Chester Co. 315 Fluor. furnace product (Thomas) 348 Graphite mine, Chester Co. 345 Fluor. furnace product (Thomas) 348 Graphite mine, Chester Co. 345 Fluor. furnace product (Thomas) 348 Graphite mine, Chester Co. 345 Fluor. furnace product (Thomas) 348 Graphite mine, Chester Rose) 369 Petrified wood, Calistoga, Calif. (Liste) 502 Petifer, William, Jr. 87 Prifligping, Mrs. William 757 Philippines, Quartz pebbles from 13 Poem (My Oklahoma Desert Rose) 354 Research, 2.500,000 for post-war 10 Rex, Robert Robinson, C. 415 Reliam, Jr. 87 Prifleging, Mrs. William 757 Philippines, Quartz pebbles from 13 Poem (My Oklahoma Desert Rose) 364 Research, 2.500,000 for post-war 10 Rex, Robert Robinson, C. 416 Robinson, C. 417 Research, 2.500,000 for post-war 10 Rex, Robert Robinson, C. 417 Research, 2.500,000 for post-war 10 Rex, Robert Robinson, C. 417 Research, 2.500,000 for po
So shore Long Island (Proven)	Sanger, Lucille 19, 148, 212, 284, 356, 432,
Some Redford minerals (Mann)	Scully Dr. Francis I
Terminal moraine N V C (Vinda)	Sementine: Ashestos mine So Africa 275
Post glacial lakes (Venna)	Vermont quarry (France)
Mianus Gorge minerals (Brown) 400	Shockley, Woodland G. 229
Hematite in wrong place (Morgan) 563	Silver in N. J. copper mine 150
Hematite in wrong place (Morgan)563 Fossil fish663	Potosi mine, Mexico
Fossil fish	Slade, Mrs. Lillie R 845

State quarry, Plainville, Mass. (Dixon) 754	Granite Peak area (Ives) 339 Dugway geode placers (Ives) 411 Fish Springs area (Ives) 555 Moroni's Postpile (Ives) 739 Kelly's Hole Minerals (Ives) 839 Vanadinite first found in Moxico 89 Van Amringe, Edwin V. 506 Venezuela: West Indies trip (Brown) 282 Vermont Asbestos quarry (Frondel) 490 Vivianite, Maryland, new occurrence 356 Volcano: Solfatara, Italy (Thurston) 14 Wallaco, Jane H. 571 Washington, Olympic Mts. minerals (Danner) 647 Waskey, Frank H. 24, 350, 429 Weinschenite from Bavaria 275 Wintringham, Neil A. 27 Wisconsin, Concretions at Rufus (Knowiton) 5 Drift or float copper (Knowiton) 491 Wyoming: Going West (Reiner) 133
Tax, This 20% Luxury (Demrick) 496 Tennessee, Native copper in Thomas, Chas. A. 81, 83, 140, 142, 199, 205, 205, 205, 202, 422, 433, 672. 211, 273, 278, 348, 415, 574 Thomas, Dr. W. B. S. 292, 422, 433, 672. 271, 273, 278, 348, 415, 574 Thurston, Anthony W. 14, 862 14, 862 Tourmaline, Large xl, Calif. (Everitt) 88 Trainer, John N. Treboer, Thomas 143 Trinidad: West Indies trip (Brown) 283 Tupper, Fred J. Turquoise in Arizona 80 In Mexico 505 In America's history (Cross) 670	New discovery of Jade (Branham) 838 Young, Arthur E. 494 Zeolite: Dyer Quarry, Pa. (Thomas) 142, 205, 278 Maze, Japan, locality 74 Zinc, Alice mine, Me. (Kidwell) 666 Zodac, Peter 144, 146, 151, 280, 346, 416, 428 492, 498, 564, 576, 668, 759, 760 Zoisite in Penn 756 January 174 February 176 February 176 February 176 March 176 129-19 April 177 193-266 May 178 265-338
Uranium deposits in Brazil 17 Minerals, nature, etc. (Stewart) 137 New deposits in Canada 207 Exhibit, topic of day (Zodac) 564 Utah, Little Cottonwood area (Ives) 67 Whirtvind Valley (Ives) 195 Stansbury Island (Ives) 267	June 179 337-406 July 180 409-48 August 181 481-55 September 182 553-64 October 183 645-73 November 184 737-83 December 185 837-936



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